SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. W91248-06-B-0006	2. TYPE OF SOLICITATION [X] SEALED BID (IFB) [ ] NEGOTIATED *(RFP)*	3. DATE ISSUED 11-May-2006	PAGE OF PAGES 1 OF 97

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. W34GM160950T01	6. PROJECT NO.

7. ISSUED BY CODE W91248	8. ADDRESS OFFER TO *(If Other Than Item 7)* CODE
DIRECTORATE OF CONTRACTING ACA, FORT CAMPBELL BLDG 2174 13 1/2 ST FORT CAMPBELL KY 42223-5334 TEL: FAX:	**See Item 7** TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. *(Include area code)* *(NO COLLECT CALLS)*
	DEBRA J. RAPP	270 798-0121

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

Firing Range Construction & Development at Ranges 11, 13, 14, 9, 23 & 36

Project Numbers: DC00004-6J, DC00054-6J, DC00007-6J, DC00005-6J, & DC00006-6J

This acquisition is 100% set-aside for Service Disabled Veteran Owned Small Business

Block 12A. See Scetion 00100, Instruction to Bidders, para h.
Block 13B: See Section 00100, Instruction to Bidders, para h .

Period of Performance is 150 calendar days after Notice to Proceed.

The estimated cost of this project ranges between $1,000,000 and $5,000,000

Last day to submit questions will be 31 May 2006.

11. The Contractor shall begin performance within 10 calendar days and complete it within 150 calendar days after receiving [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See* 52.211-10 *.)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)* [X] YES [ ] NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 1 copies to perform the work required are due at the place specified in Item 8 by 01:00 PM CST *(hour)* local time 12 Jun 2006 *(date).* If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [X] is, [ ] is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 120 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD (Continued)

(Construction, Alteration, or Repair)

OFFER ***(Must be fully completed by offeror)***

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NO. *(Include area code)*
	16. REMITTANCE ADDRESS *(Include only if different than Item 14)* **See Item 14**
CODE / FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE

AWARD ***(To be completed by Government)***

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	**ITEM**	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c) ☐ 41 U.S.C. 253(c)
26. ADMINISTERED BY CODE		27. PAYMENT WILL BE MADE BY: CODE

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _ _ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.

☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*	31A. NAME OF CONTRACTING OFFICER *(Type or print)* TEL: EMAIL:
30B. SIGNATURE / 30C. DATE	31B. UNITED STATES OF AMERICA BY / 31C. AWARD DATE

Section 00010 - Solicitation Contract Form

RANGER 13/14/15

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0001		1	Lump Sum	$_____

Range 13 - Site Development
Target Placement, Service Roads, Filter Fabric, Firing Boxes Target Backfill, Access Road, Corrugated Metal Pipe, Gravel Walkway, Seed, Fertilize, and Mulch
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00004-6J

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0002		1	Lump Sum	$_____

Range 13 - Control Tower
Steel Construction, Concrete Footing, Reinf. Steel Placement, Floor, Window, Siding Work Table, Fence Placement
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00004-6J

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0003		1	Lump Sum	$_____

Range 13 - Bleacher Enclosure
Metal Siding, 2x4, Truss, Posts, Concrete, hardware, Uplift Connectors
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00004-6J

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0004		1	Lump Sum	$_____

Range 13 - Electrical
Wiring, Lights, PA System, Lightning Protection, Poles, Grounding, Telephone System, Aircraft Warning Lights
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00004-6J

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0005		1	Lump Sum	$_____

Range 15 - Bleacher Enclosure
Metal Siding, 2x4, Truss, Posts, Concrete, hardware, Uplift Connectors
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00004-6J

RANGE 13/14/15
TOTAL FOR CLINS 0001 - 0005 $_____

RANGE 11

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0006		1	Lump Sum	
OPTION				$_____

Range 11 - Site Development
Target Placement, Service Roads, Filter Fabric, Walk-In Foxholes Target Backfill, Seed, Fertilize, Mulch, Corrugated Metal Pipe Erosion Control Materials
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00054-6J

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0007		1	Lump Sum	
OPTION				$_____

Range 11 - Control Tower
Steel Construction, Concrete Footing, Reinf. Steel Placement, Floor, Windows, Siding Work Table, Insulation, Stairway, Fence Placement
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00054-6J

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0008		1	Lump Sum	
OPTION				$_____

Range 11 - Electrical
Wiring, Lights, PA System, Lightning Protection, Poles, Grounding, Aircraft Warning Lights
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00054-6J

RANGE 11
TOTAL FOR CLINS 0006 – 0008 $_____

RANGE 36

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0009		1	Lump Sum	
OPTION				$_____

Range 36 - Site Development
Target Placement, Service Road, Filter Fabric, Firing Boxes Drainage Layer, Earthfill Placement, Target Backfill, Target Mound Construction, Erosion Control
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00007-6J

RANGE 36
TOTAL FOR CLIN 0009 $_____

RANGE 9

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0010		1	Lump Sum	
OPTION				$_____

Range 9 - Site Development
Target Placement, Gravel Walkway, Filter Fabric, Target Backfill, Drainage Materials
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00005-6J

RANGE 9
TOTAL FOR CLIN 0010 $_____

RANGE 23

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	AMOUNT
0011		1	Lump Sum	
OPTION				$_____

Range 23 - Site Development
Target Placement, Filter Fabric, Drainage Layer, Target Backfill, Seed, Fertilize, Mulch
PURCHASE REQUEST NUMBER: W34GM160950T01
PROJECT: DC00006-6J

RANGE 23
TOTAL FOR CLIN 0011 $_____

TOTAL FOR CLINS 0001 – 0011 $_____

The Government may require the delivery of the numbered line items, identified in the Schedule as an option item, at the price stated in the Schedule. The Contracting Officer may exercise an option/options by written notice to the Contractor at any time during performance of contract. Line items are prioritized and may be exercised in that order. Delivery/performance of added work shall be at the price listed in the contract, unless the parties otherwise agree.

EVALUATION OF OPTIONS FAR 52.217-5. Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, Government will evaluate the total price for the basic requirement together with all options. The Government reserves the right to exercise any and/or all options at the time of award; however, evaluation of options will not obligate the Government to exercise the options.

EVALUATION FACTORS: Prices must be entered for all line items on the Bid Schedule; otherwise, the bid may be considered nonresponsive and may be rejected.

AWARD OF CONTRACT. In keeping with the contract clause, 52.214-19, Contract Award – Sealed Bidding – Construction and other evaluation provisions listed herein, a single award will be made to that responsive, responsible bidder who submits the lowest bid price for all contract line items (base & option line items).

Section 00100 - Bidding Schedule/Instructions to Bidders

CLAUSES INCORPORATED BY FULL TEXT

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

www.arent.gov/far
http://farsite.hill.af.mil

(End of provision

CLAUSES INCORPORATED BY REFERENCE

52.204-6	Data Universal Numbering System (DUNS) Number	OCT 2003
52.214-3	Amendments To Invitations For Bids	DEC 1989
52.214-4	False Statements In Bids	APR 1984
52.214-5	Submission Of Bids	MAR 1997
52.214-7	Late Submissions, Modifications, and Withdrawals of Bids	NOV 1999
52.225-10	Notice of Buy American Act Requirement--Construction Materials	MAY 2002

CLAUSES INCORPORATED BY FULL TEXT

52.211-2 AVAILABILITY OF SPECIFICATIONS LISTED IN THE DOD INDEX OF SPECIFICATIONS AND STANDARDS (DODISS) AND DESCRIPTIONS LISTED IN THE ACQUISITION MANAGEMENT SYSTEMS AND DATA REQUIREMENTS CONTROL LIST, DOD 5010.12-L (DEC 2003)

Copies of specifications, standards, and data item descriptions cited in this solicitation may be obtained--

(a) From the ASSIST database via the Internet at http://assist.daps.dla.mil; or

(b) By submitting a request to the--Department of Defense Single Stock Point (DoDSSP), Building 4, Section D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Telephone (215) 697-2179, Facsimile (215) 697-1462.

(End of provision)

52.214-6 EXPLANATION TO PROSPECTIVE BIDDERS (APR 1984)

Any prospective bidder desiring an explanation or interpretation of the solicitation, drawings, specifications, etc.,

must request it in writing soon enough to allow a reply to reach all prospective bidders before the submission of their bids. Oral explanations or instructions given before the award of a contract will not be binding. Any information given a prospective bidder concerning a solicitation will be furnished promptly to all other prospective bidders as an amendment to the solicitation, if that information is necessary in submitting bids or if the lack of it would be prejudicial to other prospective bidders.

(End of provision)

52.214-18 PREPARATION OF BIDS--CONSTRUCTION (APR 1984)

(a) Bids must be (1) submitted on the forms furnished by the Government or on copies of those forms, and (2) manually signed. The person signing a bid must initial each erasure or change appearing on any bid form.

(b) The bid form may require bidders to submit bid prices for one or more items on various bases, including--

(1) Lump sum bidding;

(2) Alternate prices;

(3) Units of construction; or

(4) Any combination of subparagraphs (1) through (3) above.

(c) If the solicitation requires bidding on all items, failure to do so will disqualify the bid. If bidding on all items is not required, bidders should insert the words "no bid" in the space provided for any item on which no price is submitted.

(d) Alternate bids will not be considered unless this solicitation authorizes their submission.

(End of provision)

52.214-19 CONTRACT AWARD--SEALED BIDDING--CONSTRUCTION (AUG 1996)

(a) The Government will evaluate bids in response to this solicitation without discussions and will award a contract to the responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the Government, considering only price and the price-related factors specified elsewhere in the solicitation.

(b) The Government may reject any or all bids, and waive informalities or minor irregularities in bids received.

(c) The Government may accept any item or combination of items, unless doing so is precluded by a restrictive limitation in the solicitation or the bid.

(d) The Government may reject a bid as nonresponsive if the prices bid are materially unbalanced between line items or subline items. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the Government even though it may be the low evaluated bid, or if it is so unbalanced as to be tantamount to allowing an advance payment.

(End of provison)

52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
18%	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

(1) Name, address, and telephone number of the subcontractor;

(2) Employer's identification number of the subcontractor;

(3) Estimated dollar amount of the subcontract;

(4) Estimated starting and completion dates of the subcontract; and

(5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is Fort Campbell, Kentucky.

(End of provision)

52.233-2 SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from

ACA, Directorate of Contracting
Construction/Engineer Division
2176 13 ½ Street
Fort Campbell, Kentucky 42223-5358

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

52.236-27 SITE VISIT (CONSTRUCTION) (FEB 1995) – ALTERNATE I (FEB 1995)

(a) The clauses at 52.236-2, Differing Site Conditions, and 52.236-3, Site Investigations and Conditions Affecting the Work, will be included in any contract awarded as a result of this solicitation. Accordingly, offerors or quoters are urged and expected to inspect the site where the work will be performed.

(b) An organized site visit has been scheduled for--
23 May 2006, 9:00 A.M.

(c) Participants will meet at--
ACA, Directorate of Contracting
Construction/Engineer Division
2176 13 ½ Street
Fort Campbell, Kentucky 42223-5358

(End of provision)

252.211-7002 AVAILABILITY FOR EXAMINATION OF SPECIFICATIONS, STANDARDS, PLANS, DRAWINGS, DATA ITEM DESCRIPTIONS, AND OTHER PERTINENT DOCUMENTS (DEC. 1991)

The specifications, standards, plans, drawings, data item descriptions, and other pertinent documents cited in this solicitation are not available for distribution but may be examined at the following location:

ACA, Directorate of Contracting
Construction/Engineer Division
2176 13 ½ Street
Fort Campbell, Kentucky 42223-5358

(End of Clause)

BIDDERS INSTRUCTIONS

INSTRUCTION TO BIDDERS

a. **CONDITIONS AFFECTING THE WORK** - Bidders should visit the site and take such other steps as may be reasonably necessary to ascertain the nature and location of the work, and the general and local conditions which can affect the work or the cost thereof. Failure to do so will not relieve bidders from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Government will assume no responsibility for any understanding or representations concerning conditions made by any of its officers or agents prior to the execution of the contract, unless included in the Invitation for Bids, the specifications or related documents.

b. **BIDDER'S QUALIFICATIONS** - To establish its responsibility, the bidder may be requested by the Government to submit a statement regarding his previous experience in performing comparable work, his business and technical organization, financial resources, and plant available to be used in performing the work.

c. **PUBLIC OPENING OF BIDS** - Bids will be publicly opened at the time set for opening in the Invitation of Bids. Their content will be made public for the information of bidders and others interested, who may be present eight in person or by representative.

d. **CONTRACT AND BONDS** - The bidder whose bid is accepted will, within the time established in the bid, furnish performance and payment bonds on Government standard forms in the amounts indicated in the Invitation for Bids or the specifications.

e. **BIDDER'S ADDRESS** - Prospective bidders should indicate in the bid, the address to which payment and/or correspondence should be mailed, if such address is different from that shown for the bidder.

f. **MODIFICATIONS PRIOR TO DATE SET FOR OPENING BIDS** - The right is reserved as the interest of the Government may require, to revise or amend the specifications or drawings or both prior to the date set for opening bids. Such revisions and amendments, if any, will be announced by an amendment or amendments to this Invitation for Bids. If the revisions and amendments are of a nature which requires material changes in quantities or prices bid or both, the date set for opening bids may be postponed by such number of days as in the opinion of the issuing officer will enable bidders to revise their bids. In such cases, the amendment will include an announcement of the new date for opening bids.

g. **UTILITIES** - Utility services (reasonable amounts of water and electricity) required on the job site for accomplishment of the work will be furnished at not cost to the contractor; however, the Government will make no connections or alterations to the existing utility facilities for accomplishment of this work and any changes required by the contractor will be at his expense and at no additional cost to the Government. Utilities for office and/or storage buildings or areas will be billed to the contractor monthly and will not be furnished free of charge.

h. **BIDDING MATERIAL** - Specifications, drawings and bid forms can be obtained at no cost from the Directorate of Contracting Home Page at http://doc.campbell.army.mil.

i. **NOTICE TO OFFERORS - USE OF CLASS I OZONE-DEPLETING SUBSTANCES**

(1) In accordance with Section 326 of P.L. 102-484, the Government is prohibited from awarding any contract which includes a specification or standard that requires the use of a Class I ozone-depleting substance (ODS) identified in Section 602(a) of the Clean Air Act, (42 U.S.C. 767a(a)), or that can be met only through the use of such a substance unless such use has been approved, on an individual basis, by a senior acquisition official who determines that there is no suitable substitute available.

(2) To comply with this statue, the Government has conducted a best efforts screening of the specifications and standards associated with this acquisition to determine whether they contain any ODS requirements. To the extent that ODS requirements were revealed by this review, they are identified below with the disposition determined in each case.

(3) If offerors possess any special knowledge about any other ODSs required directly or indirectly at any level of contract performance, the U.S. Army would appreciate if such information was surfaced to the Contracting Officer for appropriate action. To preclude delay to the procurement, offerors should provide any information as soon as possible after release of this solicitation and prior to the submission of offers to the extent practicable. It should be understood that there is no obligation on offerors to comply with this request and that no compensation can be provided for doing so.

ODS Identified Specification/Standard Disposition

None

j. **NOTICE** - The following bid information is applicable only if bid is **over twenty five thousand dollars ($25,000):**

(1) **BID BONDS: This is applicable only if bid is over one hundred thousand dollars ($100,000).** Each bidder shall submit with his bid a Bid Bond (Standard Form 24) with good and sufficient surety or sureties acceptable to the Government in the form of twenty percent (20%) of the bid price or three million dollars ($3,000,000) whichever is lesser. The bid bond penalty may be expressed in terms of a percentage or may be expressed in dollars and cents.

(2) **PERFORMANCE BONDS: This is applicable only if bid is over one hundred thousand dollars ($100,000)**. Within ten (10) days after receipt of contract award to the bidder whom award is made, one (1) bond, with good and sufficient surety or sureties acceptable to the Government, shall be furnished; namely a Performance bond (Standard Form 25). The penal sum of such bond shall equal one hundred percent (100%) of the contract price. (See FAR clause 52.228-15.)

(3) **PAYMENT BONDS**: Within ten (10) days after receipt of contract award to the bidder whom award is made, one (1) bond, with good and sufficient surety or sureties acceptable to the Government, shall be furnished; namely a Payment Bond (Standard Form 25A). The penal sum of such bond shall be as follows:

(a) Payment Bond: (See Far Clauses 52.228-0014, Irrevocable Letter of Credit (DEC 1999) and 52.228-15 Performance and Payment Bonds—Construction (JULY 2000))

1 The penal sum will be one hundred (100%) of the contract price.

(3**) INDIVIDUAL SURETIES** will not be accepted for construction contracts. Only bonds from corporation or financial institutions will be recognized as responsive to the submission for bid bonds or performance and payment bonds. Prospective contractors whose bids are accompanied by an Individual Surety will therefore be rejected as nonresponsive and not considered for award.

i. **EXPLANATION OF PROVISION/CLAUSE NUMBERS UTILIZED IN THIS SOLICITATION:**

(1) When the seventh digit of the provision/clause number is a "0", this indicates a provision/clause from the Federal Acquisition Regulation (FAR), e.g., 52.0252-0007.

(2) Where the seventh digit of a provision/clause number is a "7", this indicates a provision/clause from the Defense Acquisition Regulation Supplement (DFARS), e.g., 52.252-7007.

(3) Where the seventh digit of a provision/clause number is a "9", this indicates a provision/clause from the Army Federal Acquisition Regulation Supplement (AFARS), e.g., 52.0252-9007.

SUBJECT TO AVAILABILITY OF FUNDS: Funds are not presently available for this acquisition. No contract award will be made until appropriated funds are made available from which payment for contract purposes can be made.

LAST DAY TO SUBMIT QUESTIONS WILL BE 31 MAY 2006.

Section 00600 - Representations & Certifications

CLAUSES INCORPORATED BY FULL TEXT

52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (JAN 2005)

(a)(1) If the clause at 52.204-7, Central Contractor Registration, is included in this solicitation, paragraph (b) of this provision applies.

(2) If the clause at 52.204-7 is not included in this solicitation, and the offeror is currently registered in CCR, and has completed the ORCA electronically, the offeror may choose to use paragraph (b) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

(__) Paragraph (b) applies.

(__) Paragraph (b) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(b) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at http://orca.bpn.gov. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of Provision)

CORP CERTS

CORPORATE CERTIFICATE (The same officer shall not execute both the contract and the certificate.)

I, _____, certify that I am the _____ of the corporation named as contractor herein; that _____who signed this contract on behalf of the contractor was then _____ of said corporation; that said contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

CORPORATE SEAL _____

Signature

_____
Title

_____
Date

WHEN CONTRACTOR IS AN INDIVIDUAL, PARTNERSHIP OR UNINCORPORATED FIRM, COMPLETE THE FOLLOWING STATEMENT:

I, _____, the undersigned represents the organization named as contractor herein, and am empowered to sign on behalf of said contractor by authority of and for the owner, partners or governing body of such unincorporated firm.
The following are the full names of all partners.

Name:
Name:
Name:

_____
Signature and Title

_____
Name of Bidder or Contractor

_____
Date

Section 00700 - Contract Clauses

CLAUSES INCORPORATED BY FULL TEXT

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

www.arnet.gov/far
http://farsite.hill.af.mil

(End of clause)

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	JUL 1995
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	SEP 2005
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	JAN 2005
52.214-26	Audit and Records--Sealed Bidding	OCT 1997
52.217-5	Evaluation Of Options	JUL 1990
52.219-16	Liquidated Damages-Subcontracting Plan	JAN 1999
52.219-27	Notice of Total Service-Disabled Veteran-Owned Small Business Set-Aside	MAY 2004
52.222-3	Convict Labor	JUN 2003
52.222-4	Contract Work Hours and Safety Standards Act - Overtime Compensation	JUL 2005
52.222-6	Davis Bacon Act	JUL 2005
52.222-7	Withholding of Funds	FEB 1988
52.222-8	Payrolls and Basic Records	FEB 1988
52.222-9	Apprentices and Trainees	JUL 2005
52.222-10	Compliance with Copeland Act Requirements	FEB 1988
52.222-11	Subcontracts (Labor Standards)	JUL 2005
52.222-12	Contract Termination-Debarment	FEB 1988
52.222-13	Compliance with Davis-Bacon and Related Act Regulations.	FEB 1988
52.222-14	Disputes Concerning Labor Standards	FEB 1988
52.222-15	Certification of Eligibility	FEB 1988
52.222-26	Equal Opportunity	APR 2002

52.222-27	Affirmative Action Compliance Requirements for Construction	FEB 1999
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	DEC 2001
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	DEC 2001
52.223-5	Pollution Prevention and Right-to-Know Information	AUG 2003
52.223-6	Drug-Free Workplace	MAY 2001
52.223-14	Toxic Chemical Release Reporting	AUG 2003
52.225-5	Trade Agreements	JAN 2005
52.225-11	Buy American Act--Construction Materials Under Trade Agreements	JAN 2005
52.226-1	Utilization Of Indian Organizations And Indian-Owned Economic Enterprises	JUN 2000
52.227-1	Authorization and Consent	JUL 1995
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	AUG 1996
52.227-4	Patent Indemnity-Construction Contracts	APR 1984
52.228-1	Bid Guarantee	SEP 1996
52.228-2	Additional Bond Security	OCT 1997
52.228-5	Insurance - Work On A Government Installation	JAN 1997
52.228-11	Pledges Of Assets	FEB 1992
52.228-12	Prospective Subcontractor Requests for Bonds	OCT 1995
52.228-14	Irrevocable Letter of Credit	DEC 1999
52.228-15	Performance and Payment Bonds--Construction	SEP 2005
52.229-3	Federal, State And Local Taxes	APR 2003
52.232-5	Payments under Fixed-Price Construction Contracts	SEP 2002
52.232-7	Payments Under Time-And-Materials And Labor Hour Contracts	AUG 2005
52.232-17	Interest	JUN 1996
52.232-23	Assignment Of Claims	JAN 1986
52.232-27	Prompt Payment for Construction Contracts	SEP 2005
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3	Protest After Award	AUG 1996
52.236-2	Differing Site Conditions	APR 1984
52.236-3	Site Investigation and Conditions Affecting the Work	APR 1984
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-8	Other Contracts	APR 1984
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements	APR 1984
52.236-10	Operations and Storage Areas	APR 1984
52.236-11	Use and Possession Prior to Completion	APR 1984
52.236-12	Cleaning Up	APR 1984
52.236-13	Accident Prevention	NOV 1991
52.236-14	Availability and Use of Utility Services	APR 1984
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-17	Layout of Work	APR 1984
52.236-21 Alt I	Specifications and Drawings for Construction (Feb 97) - Alternate I	APR 1984

52.236-26	Preconstruction Conference	FEB 1995
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.243-4	Changes	AUG 1987
52.244-2	Subcontracts	AUG 1998
52.244-5	Competition In Subcontracting	DEC 1996
52.244-6	Subcontracts for Commercial Items	DEC 2004
52.246-12	Inspection of Construction	AUG 1996
52.246-21	Warranty of Construction	MAR 1994
52.248-3	Value Engineering-Construction	FEB 2000
52.249-2 Alt I	Termination for Convenience of the Government (Fixed-Price) (May 2004) - Alternate I	SEP 1996
52.249-10	Default (Fixed-Price Construction)	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2004
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	MAR 1998
252.219-7003	Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DOD Contracts)	APR 1996
252.223-7006	Prohibition On Storage And Disposal Of Toxic And Hazardous Materials	APR 1993
252.225-7012	Preference For Certain Domestic Commodities	JUN 2004
252.225-7031	Secondary Arab Boycott Of Israel	JUN 2005
252.227-7033	Rights in Shop Drawings	APR 1966
252.231-7000	Supplemental Cost Principles	DEC 1991
252.236-7005	Airfield Safety Precautions	DEC 1991
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.243-7002	Requests for Equitable Adjustment	MAR 1998

CLAUSES INCORPORATED BY FULL TEXT

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 150 calendar days. If all line items are not awarded, performance period will be negotiated. The time stated for completion shall include final cleanup of the premises.

*The Contracting Officer shall specify either a number of days after the date the contractor receives the notice to proceed, or a calendar date.

(End of clause)

52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of $204.78 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(End of clause)

252.204-7004 CENTRAL CONTRACTOR REGISTRATION (52.204-7) ALTERNATE A (NOV 2003)

(a) Definitions. As used in this clause--

“Central Contractor Registration (CCR) database” means the primary Government repository for contractor information required for the conduct of business with the Government.

“Commercial and Government Entity (CAGE) code” means--

(1) A code assigned by the Defense Logistics Information Service (DLIS) to identify a commercial or Government entity; or

(2) A code assigned by a member of the North Atlantic Treaty Organization that DLIS records and maintains in the CAGE master file. This type of code is known as an “NCAGE code.”

“Data Universal Numbering System (DUNS) number” means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

“Data Universal Numbering System +4 (DUNS+4) number” means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11 of the Federal Acquisition Regulation) for the same parent concern.

“Registered in the CCR database” means that--

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database;

(2) The Contractor's CAGE code is in the CCR database; and

(3) The Government has validated all mandatory data fields and has marked the records “Active.”

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS +4" followed by the DUNS or DUNS +4 number that identifies the offeror's name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number-

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at http://www.dnb.com; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company Physical Street Address, City, State, and Zip Code.

(iv) Company Mailing Address, City, State and Zip Code (if separate from physical).

(v) Company Telephone Number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(g)
(1)
(i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of Subpart 42.12 of the FAR; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(h) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at http://www.ccr.gov or by calling 1-888-227-2423, or 269-961-5757.

(End of clause)

252.236-7000 MODIFICATION PROPOSALS - PRICE BREAKDOWN. (DEC 1991)

(a) The Contractor shall furnish a price breakdown, itemized as required and within the time specified by the Contracting Officer, with any proposal for a contract modification.

(b) The price breakdown --

(1) Must include sufficient detail to permit an analysis of profit, and of all costs for --

(i) Material;

(ii) Labor;

(iii) Equipment;

(iv) Subcontracts; and

(v) Overhead; and

(2) Must cover all work involved in the modification, whether the work was deleted, added, or changed.

(c) The Contractor shall provide similar price breakdowns to support any amounts claimed for subcontracts.

(d) The Contractor's proposal shall include a justification for any time extension proposed.

252.236-7001 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall--

(1) Check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies;

(4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and

(5) Reproduce and print contract drawings and specifications as needed.

(c) In general--

(1) Large-scale drawings shall govern small-scale drawings; and

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified on the following index of drawings:

Title: Firing Range construction and Development, Ranges 11, 13, 14, 9, 23, & 36

File: DPW

Drawing No: Range 11, Range 13/14, Range 9, Range 23 & Range 36

(End of clause)

252.247-7023 Transportation of Supplies by Sea (MAY 2002)

(a) Definitions. As used in this clause --

(1) "Components" means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor.

(2) "Department of Defense" (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

(3) "Foreign flag vessel" means any vessel that is not a U.S.-flag vessel.

(4) "Ocean transportation" means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.

(5) "Subcontractor" means a supplier, materialman, distributor, or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract.

(6) "Supplies" means all property, except land and interests in land, that is clearly identifiable for eventual use by or owned by the DoD at the time of transportation by sea.

(i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.

(ii) "Supplies" includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and components of the foregoing.

(7) "U.S.-flag vessel" means a vessel of the United States or belonging to the United States, including any vessel registered or having national status under the laws of the United States.

(b)(1) The Contractor shall use U.S.-flag vessels when transporting any supplies by sea under this contract.

(2) A subcontractor transporting supplies by sea under this contract shall use U.S.-flag vessels if--

(i) This contract is a construction contract; or

(ii) The supplies being transported are--

(A) Noncommercial items; or

(B) Commercial items that--

(1) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it contracts for f.o.b. destination shipment);

(2) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or

(3) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(c) The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that --

(1) U.S.-flag vessels are not available for timely shipment;

(2) The freight charges are inordinately excessive or unreasonable; or

(3) Freight charges are higher than charges to private persons for transportation of like goods.

(d) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum --

(1) Type, weight, and cube of cargo;

(2) Required shipping date;

(3) Special handling and discharge requirements;

(4) Loading and discharge points;

(5) Name of shipper and consignee;

(6) Prime contract number; and

(7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.

(e) The Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Maritime Administration, Office of Cargo Preference, U.S. Department of Transportation, 400 Seventh Street SW., Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information:

(1) Prime contract number;

(2) Name of vessel;

(3) Vessel flag of registry;

(4) Date of loading;

(5) Port of loading;

(6) Port of final discharge;

(7) Description of commodity;

(8) Gross weight in pounds and cubic feet if available;

(9) Total ocean freight in U.S. dollars; and

(10) Name of the steamship company.

(f) The Contractor shall provide with its final invoice under this contract a representation that to the best of its knowledge and belief--

(1) No ocean transportation was used in the performance of this contract;

(2) Ocean transportation was used and only U.S.-flag vessels were used for all ocean shipments under the contract;

(3) Ocean transportation was used, and the Contractor had the written consent of the Contracting Officer for all non-U.S.-flag ocean transportation; or

(4) Ocean transportation was used and some or all of the shipments were made on non-U.S.-flag vessels without the written consent of the Contracting Officer. The Contractor shall describe these shipments in the following format:

ITEM DESCRIPTION	CONTRACT LINE ITEMS	QUANTITY
TOTAL		

(g) If the final invoice does not include the required representation, the Government will reject and return it to the Contractor as an improper invoice for the purposes of the Prompt Payment clause of this contract. In the event there has been unauthorized use of non-U.S.-flag vessels in the performance of this contract, the Contracting Officer is entitled to equitably adjust the contract, based on the unauthorized use.

(h) In the award of subcontracts for the types of supplies described in paragraph (b)(2) of this clause, the Contractor shall flow down the requirements of this clause as follows:

(1) The Contractor shall insert the substance of this clause, including this paragraph (h), in subcontracts that exceed the simplified acquisition threshold in part 2 of the Federal Acquisition Regulation.

(2) The Contractor shall insert the substance of paragraphs (a) through (e) of this clause, and this paragraph (h), in subcontracts that are at or below the simplified acquisition threshold in part 2 of the Federal Acquisition Regulation.

(End of clause)

252.247-7024 Notification of Transportation of Supplies by Sea (MAR 2000)

(a) The Contractor has indicated by the response to the solicitation provision, Representation of Extent of Transportation by Sea, that it did not anticipate transporting by sea any supplies. If, however, after the award of this contract, the Contractor learns that supplies, as defined in the Transportation of Supplies by Sea clause of this contract, will be transported by sea, the Contractor --

(1) Shall notify the Contracting Officer of that fact; and

(2) Hereby agrees to comply with all the terms and conditions of the Transportation of Supplies by Sea clause of this contract.

(b) The Contractor shall include this clause; including this paragraph (b), revised as necessary to reflect the relationship of the contracting parties--

(1) In all subcontracts under this contract, if this contract is a construction contract; or

(2) If this contract is not a construction contract, in all subcontracts under this contract that are for--

(i) Noncommercial items; or

(ii) Commercial items that--

(A) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it subcontracts for f.o.b. destination shipment);

(B) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or

(C) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(End of clause)

SECTION 00800
SPECIAL CONTRACT REQUIREMENTS
SPECIAL PROVISIONS

SP 1. WORK HOURS.

a. Normal work hours are from 7:30 A.M. through 4:00 P.M., Monday through Friday. contractors will not be permitted to work after normal work hours or on Saturday, Sunday or legal holidays unless authorized by the Contracting Officer. However, Saturday, Sunday and legal holidays and any work after normal workhours are included in computation of performance time.

New Year's Day	Labor Day
Martin Luther King, Jr's Birthday	Columbus Day
President's Day	Veteran's Day
Memorial Day	Thanksgiving Day
Independence Day	Christmas Day

b. When one of the above designated legal holidays falls on Sunday, the following Monday will be observed as a legal holiday. When a legal holiday falls on a Saturday, the preceding Friday is observed as a holiday by U.S. Government agencies.

SP 2. FIRE PREVENTION. The Contractor shall comply with fire prevention practices as set forth by the National Fire Protection Association and other recognized fire prevention agencies and post regulations.

SP 3. PREPARATION OF PROGRESS SCHEDULES AND REPORTS. The report contemplated by the clause entitled "Schedules for Construction Contracts" shall be accomplished on and in accordance with instructions pertaining to FORSCOM Form 59-R, "Contract Progress Report", original and two copies. Progress reports shall be submitted weekly.

SP 4. CONTRACT PROGRESS REPORTS. The contractor and the Public Works Business Center Inspector assigned to the project shall submit a separate FORSCOM Form 59-1-R, "Contract Progress Report", complete, signed and dated to the Contracting Officer. These reports will be reviewed by the Contracting Officer and action taken to resolve any variances in the two (2) reports. The contractor shall also submit an original to the Contracting Officer's Representative accompanies by a brief narrative report of work accomplished.

SP 5. TRANSMITTAL OR SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATIONS.

a. All materials and equipment for which approval is required by the provisions, as contemplated by the "Materials and Workmanship" clause herein, shall be submitted by the Contractor within 10 days after receipt of Notice to Proceed and approval obtained prior to the Contractor incorporating said materials and articles in the work. Other submittals shall be submitted by the Contractor 10 days prior to beneficial use or final acceptance, whichever occurs first.

b. All data submittals required by this contract shall be submitted by the Contractor by means of Corps of Engineers Form ENG-4025R, "Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certifications". Unless specified elsewhere, all data submittals shall be in four (4) copies.

SP 6. REQUIRED MATERIAL SUBMITTALS. Pursuant to Paragraph #5, "Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certification", the following paragraphs of the provisions require Contracting Officer's approval of materials the Contractor contemplates incorporating in the work. All materials installed or sued without required approval shall be at the risk of subsequent rejection and tearout. (See Contract Clause entitled "Material and Workmanship" (APR 1984)(FAR 52.236-5)).

TECHNICAL PROVISION DESCRIPTION/ PARAGRAPH NUMBER	DESCRIPTION
Section 01000	
Para 4.8	**Spill Plan**
Para 4.9	**Storm Water Pollution Prevention Plan (SWPPP)**
Para 6.2	**100% Asbestos Free Certification**
Para 7	**Quality Control Plan**
Section 16370	
Para1.3.1	**Manufacturer's Catalog**
Para 1.3.2	**Material, Equipment and Fixture Lists**
Para 1.3.3	**Installation Procedures**
Para 1.3.4	**Electrical Distribution System Drawings**
Para 1.3.5	**As-Built Drawings**
Para 1.3.6.1	**Factory Test Reports**
Para 1.3.6.2	**Field Testing Reports**
Para 1.3.6.3	**Test Reports**
Para 1.3.6.4	**Materials and Equipment Certificates**
Para 1.3.6.5	**Operation & Maintenance Manuals**
Section 16415	
Para 1.3.1	**Electrical Work Drawings**
Para 1.3.2	**Materials and Equpment Reports**

SP 7. SCHEDULE OF INSURANCE.

a. The Contract shall, at its own expense, provide and maintain during the entire performance period of this contract at least the kinds and minimum amounts of insurance required below:

Workmen's Compensation and Employer's Liability Insurance	**$100,000.00**
General Liability Insurance for Bodily Injury Liability	
Minimum Per Occurrence	**$500,000.00**
Automobile Liability Insurance:	
Minimum Per Person	**$200,000.00**
Minimum Per Occurrence for Bodily Injury	**$500,000.00**
Minimum Per Occurrence for Property Damage	**$ 20,000.00**

b. Before commencing work under this contract, the Contractor shall certify to the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective (1) for such period as the laws of the state in which this contract is to be performed or prescribed and (2) until 30 days after the insurer or the Contracting gives written notice to the Contracting Officer, whichever period is longer.

c. The Contractor shall insert the substance of the clause, entitled “Insurance - Work on a Government Installation (FAR 52.228-05),” in subcontracts under this contract that require work on a Government installation and shall required subcontractors to provide and maintain the insurance required above.

SP 8. ALTERNATIVE DISPUTE RESOLUTION (ADR). “In furtherance of Federal policy and the Administrative Dispute Resolution Act of 1990, ADR, Pub. L. 101-552, the Contracting Officer will try to resolve all posts award acquisition issues in controversy by mutual agreement of the parties. Interested parties are encouraged to use alternative dispute resolution procedures to the maximum extent practicable in accordance with the authority and the requirements of the ADR Act.”

SP 9. EXCAVATION AND UTILITY CLEARANCE. The Public Works Business Center shall obtain, and ensure that the contractor is provided with necessary excavation and utility clearances. The contractor shall request such clearances in writing to the contracting office not less than ten (10) calendar days prior to the date which he anticipates commencement of work. It shall be the contractor’s responsibility to pick up such clearances at the Public Works Business Center, Contract Management Branch, Building 846, Fort Campbell, KY. The contractor will not proceed with excavation of any kind until he has accomplished the following:

a. Obtained required clearance. Clearances will be valid for 150 days from date of issue or as otherwise directed by the issuing authority.

b. Obtained drawing(s) showing all utilities within the proposed work area(s).

c. Obtained approval of completed staking in the field by the Engineers for the work area affected.

SECTION 00900 WAGE DETERMINATION

General Decision Number KY030025 04/07/2006 KY25

General Decision Number **KY030025**
Superseded General Decision No. **KY020025**
State: Kentucky

Construction Type: Heavy and Highway

Counties: Allen, Ballard, Butler, Caldwell, Calloway, Carlisle, Christian, Crittenden, Daviess, Edmonson, Fulton, Graves, Hancock, Henderson, Hickman, Hopkins, Livingston, Logan, Lyon, Marshall, McCracken, McLean, Muhlenberg, Ohio, Simpson, Todd, Trigg, Union, Warren and Webster Counties in Kentucky.

BALLARD, BUTLER, CALDWELL, CARLISLE, CRITTENDEN, HAVIESS, EDMONSON, FULTON, GRAVES, HANCOCK, HENDERSON, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, MCLEAN, H UHLENBERG, OHIO, UNION & WEBSTER COUNTIES.

Heavy and Highway Construction Projects

Modification Number	Publication Date
0	06/13/2003
1	10/31/2003
2	11/07/2003
3	12/05/2003
4	12/12/2003
5	03/05/2004
6	03/19/2004
7	04/16/2004
8	05/14/2004
9	06/18/2004
10	07/23/2004
11	08/13/2004
12	10/22/2004
13	12/24/2004
14	01/14/2005
15	03/04/2005
16	05/06/2005
17	06/03/2005
18	07/08/2005
19	08/26/2005
20	11/04/2005
21	01/13/2006
22	02/03/2006
23	03/03/2006
24	04/07/2006

BRIN0004-002 04/01/2005

BALLARD, BUTLER, CALDWELL, CARLISLE, CRITTENDEN, DAVIESS, EDMONSON, FULTON, GRAVES, HANCOCK, HENDERSON, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

	Rates	Fringes
BRICKLAYERS	24.80	9.40

BRTN0004-005 05/01/2005

ALLEN, CALLOWAY, CHRISTIAN, LOGAN, SIMPSON, TODD, TRIGG & WARREN COUNTIES:

	Rates	Fringes
BRICKLAYERS	25.10	1.60

CARP0357-002 07/01/2005

	Rates	Fringes
CARPENTERS	23.30	8.02
DIVERS	35.33	8.02
PILEDRIVERMEN	23.55	8.02

CARP1031-007 06/01/2005

ALLEN, BUTLER, EDMONSON, LOGAN, SIMPSON & WARREN COUNTIES:

	Rates	Fringes
MILLWRIGHTS	23.05	12.50

CARP1080-005 06/01/2005

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, TODD & TRIGG COUNTIES:

	Rates	Fringes
MILLWRIGHTS	21.59	11.64

CARP1080-007 06/01/2005

DAVIESS, HANCOCK, HENDERSON, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

	Rates	Fringes
MILLWRIGHTS	21.58	11.90

ELEC0369-006 06/02/2004

BUTLER, EDMONSON, LOGAN, TODD & WARREN COUNTIES:

	Rates	Fringes
ELECTRICIAN	25.75	9.52

ELEC0429-001 01/01/1998

ALLEN & SIMPSON COUNTIES:

	Rates	Fringes
ELECTRICIANS	15.85	4.115

ELEC0816-002 06/01/2005

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON (Except a 5 mile radius of City Hall in Fulton), GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
ELECTRICIANS:		
Cable Splicers	25.56	24%+5.15
Electricians	25.31	24%+5.15

ELEC1701-003 06/01/2005

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

	Rates	Fringes
ELECTRICIANS:		
Electricians	24.41	24.125%+5.28
Heilarc Welding; & Cable Splicing	24.66	24.125%+5.28

ELEC1925-002 06/01/2004

FULTON COUNTY (Up to a 5 mile radius of City Hall in Fulton):

	Rates	Fringes
CABLE SPLICERS	19.00	9.99
ELECTRICIANS	18.50	9.99

ENGI0181-017 01/01/2006

	Rates	Fringes
POWER EQUIPMENT OPERATORS:		
GROUP 1	22.80	10.90

GROUP 2	20.38	10.90
GROUP 3	20.76	10.90
GROUP 4	20.12	10.90

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1 - A-Frame Winch Truck; Auto Patrol; Backfiller; Batcher Plant; Bituminous Paver; Boom Cat; Bulldozer; Mechanic; Cableway; Carry-All Scoop; Central Compressor Plant; Clamshell; Concrete Mixer (21 cu. ft. or Over); Concrete Paver; Truck-Mounted Concrete Pump; Core Drill; Crane; Crusher Plant; Derrick; Derrick Boat; Ditching & Trenching Machine; Dragline; Elevating Grader & Loaders; Grade-All; Gurries; High Lift; Hoe-Type Machine; Hoist (Two or More Drums); Hoisting Engine (Two or More Drums); Hydrocrane; Hyster; KeCal Loader; LeTourneau; Locomotive; Mechanic Welder; Mucking Machine; Motor Scraper; Orangepeel Bucket; Piledriver; Power Blade; Pumpcrete; Push Dozer; Rock Spreader, attached to equipment; Rotary Drill; Roller (Bituminous); Scarifier; Scoopmobile; Shovel; Side Boom; Subgrader; Tailboom; Tow or Push Boat; Tower Crane (French, German & other types); Tractor Shovel; & Truck Crane

GROUP 2 - Air Compressor (Over 900 cu. ft. per min.); Bituminous Mixer; Boom Type Tamping Machine; Bull Float; Concrete Mixer (Under 21 cu. ft.); Dredge Engineer; Electric Vibrator; Compactor/Self-Propelled Compactor; Elevator (One Drum or Buck Hoist); Elevator (When used to Hoist Building Material); Finish Machine; Firemen & Hoist (One Drum); Flexplane; Forklift (Regardless of Lift Height); Form Grader; Joint Sealing Machine; Outboard Motor Boat; Power Sweeper (Riding Type); Roller (Rock); Ross Carrier; Skid Mounted or Trailer Mounted Conrete Pump; Switchman or Brakeman; Throttle Valve Person; Tractair & Road Widening Trencher; Tractor (50 H.P. or Over); Truck Crane Oiler; Tugger; Welding Machine; Well Points; & Whirley Oiler

GROUP 3 - Greaser on Grease Facilities servicing Heavy Equipment

GROUP 4 - Bituminous Distributor; Burlap & Curing Machine; Cement Gun; Concrete Saw; Conveyor; Deckhand Oiler; Grout Pump; Hydraulic Post Driver; Hydro Seeder; Mud Jack; Oiler; Paving Joint Machine; Power Form Handling Equipment; Pump; Roller (Earth); Steerman; Tamping Machine; Tractor (Under 50 H.P.); & Vibrator

CRANES WITH BOOMS 150 ft. & Over (Including JIB), and where the length of the boom in combination with the length of the piling equals or exceeds 150 ft. - $1.00 above Group 1 rate

EMPLOYEES ASSIGNED TO WORK BELOW GROUND LEVEL ARE TO BE PAID 10% ABOVE BASIC WAGE RATE. THIS DOES NOT APPLY TO OPEN CUT WORK.

IRON0070-005 01/01/2006

BUTLER COUNTY (Eastern eighth, including the Townships of Decker, Lee & Tilford);

EDMONSON COUNTY (Northern three-fourths, including the Townships of Asphalt, Bee Spring, Brownsville, Grassland, Huff, Kyrock, Lindseyville, Mammoth Cave, Ollie, Prosperity, Rhoda, Sunfish & Sweden):

	Rates	Fringes
IRONWORKERS:		
Structural; Ornamental; Reinforcing; Precast Concrete Erectors	22.93	14.20

IRON0103-004 08/01/2005

BUTLER COUNTY (Townships of Aberdeen, Bancock, Casey, Dexterville, Dunbar, Elfie, Gilstrap, Huntsville, Logansport, Monford, Morgantown, Provo, Rochester, South Hill & Welchs Creek);

CALDWELL COUNTY (Northeastern third, including the Township of Creswell);

CHRISTIAN COUNTY (Northern third, including the Townships of Apex, Crofton, Kelly, Mannington & Wynns);

CRITTENDEN COUNTY (Northeastern half, including the Townships of Grove, Mattoon, Repton, Shady Grove & Tribune);

MUHLENBERG COUNTY (Townships of Bavier, Beech Creek Junction, Benton, Brennen, Browder, Central City, Cleaton, Depoy, Drakesboro, Eunis, Graham, Hillside, Luzerne, Lynn City, Martwick, McNary, Millport, Moorman, Nelson, Paradise, Powderly, South Carrollton, Tarina & Weir);

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, OHIO, UNION & WEBSTER COUNTIES:

	Rates	Fringes
IRONWORKERS	23.50	12.475

IRON0492-003 05/01/2005

BUTLER COUNTY (Southern third, including the Townships of Boston, Berrys Lick, Dimple, Jetson, Quality, Sharer, Sugar Grove & Woodbury);

CHRISTIAN COUNTY (Eastern two-thirds, including the Townships of Bennettstown, Casky, Herndon, Hopkinsville, Howell, Masonville, Pembroke & Thompsonville);

EDMONSON COUNTY (Southern fourth, including the Townships of Chalybeate & Rocky Hill);

MUHLENBERG COUNTY (Southern eighth, including the Townships of Dunnior, Penrod & Rosewood);

ALLEN, LOGAN, SIMPSON, TODD & WARREN COUNTIES:

	Rates	Fringes
IRONWORKERS	19.32	7.20

IRON0782-006 08/01/2005

CALDWELL COUNTY (Southwestern two-thirds, including the Townships of Cedar Bluff, Cider, Claxton, Cobb, Crowtown, Dulaney, Farmersville, Fredonia, McGowan, Otter Pond & Princeton);

CHRISTIAN COUNTY (Western third, Excluding the Townships of Apex, Crofton, Kelly, Mannington, Wynns, Bennettstown, Casky, Herndon, Hopkinsville, Howell, Masonville, Pembroke & Thompsonville);

CRITTENDEN COUNTY (Southwestern half, including the Townships of Crayne, Dycusburg, Frances, Marion, Mexico, Midway, Sheridan & Told);

BALLARD, CALLOWAY, CARLISLE, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
IRONWORKERS:		
Projects with a total contract cost of $20,000,000.00 or above	22.90	12.90
All Other Work	21.60	11.84

LABO0189-005 07/01/2005

	Rates	Fringes
LABORERS:		
GROUP 1	17.75	8.96
GROUP 2	18.00	8.96
GROUP 3	18.05	8.96
GROUP 4	18.65	8.96

LABORER CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Drill Tender; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; & Wrecking of Concrete Form

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; & Wagon Driller

GROUP 3 - Air Track Driller; Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Powderman & Blaster; Side Rail Setter; Rail Paved Ditch; Screw Operator; Tunnel (Free Air); & Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0189-006 07/01/2005

ALLEN, BUTLER, CALDWELL, CHRISTIAN, DAVIESS, EDMONSON, HANCOCK, HOPKINS, LOGAN, MCLEAN, HUHLENBERG, OHIO, SIMPSON, TODD, TRIGG & WARREN COUNTIES

	Rates	Fringes
LABORERS:		

GROUP 1	18.43	8.28
GROUP 2	18.68	8.28
GROUP 3	18.73	8.28
GROUP 4	19.33	8.28

LABORER CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Drill Tender; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; & Wrecking of Concrete Form

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; & Wagon Driller

GROUP 3 - Air Track Driller; Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Powderman & Blaster; Side Rail Setter; Rail Paved Ditch; Screw Operator; Tunnel (Free Air); & Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0189-007 07/01/2005

ALLEN, BUTLER, CALDWELL, CHRISTIAN, DAVIESS, EDMONSON, HANCOCK, HOPKINS, LOGAN, MCLEAN, HUHLENBERG, OHIO, SIMPSON, TODD, TRIGG & WARREN COUNTIES

	Rates	Fringes
LABORERS:		
GROUP 1	19.71	7.00
GROUP 2	19.96	7.00
GROUP 3	20.01	7.00
GROUP 4	20.61	7.00

LABORER CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Drill Tender; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; & Wrecking of Concrete Form

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; & Wagon Driller

GROUP 3 - Air Track Driller; Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Powderman & Blaster; Side Rail Setter; Rail Paved Ditch; Screw Operator; Tunnel (Free Air); & Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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PAIN0032-002 05/01/2005

BALLARD COUNTY:

	Rates	Fringes
PAINTERS:		
Bridges & Dams	26.39	9.53
All Other Work	22.09	9.53

Spray, Blast, Steam, High & Hazardous (Including Lead Abatement) and All Epoxy - $1.00 Premium

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PAIN0118-003 05/01/2005

EDMONSON COUNTY:

	Rates	Fringes
PAINTERS:		
Abrasive Blaster; Fireproofing;		
Brush & Roller	17.37	8.12
Spray, Sandblast, Power Tools		
Waterblast & Steam Cleaning	17.87	8.12

PAIN0156-006 04/01/2005

DAVIESS, HANCOCK, HENDERSON, MCLEAN, OHIO, UNION & WEBSTER COUNTIES:

	Rates	Fringes
PAINTERS:		
BRIDGES, LOCKS & DAMS:		
GROUP 1	22.90	9.53

GROUP 2	23.15	9.53
GROUP 3	23.90	9.53
GROUP 4	24.90	9.53
ALL OTHER WORK:		
GROUP 1	21.75	9.53
GROUP 2	22.00	9.53
GROUP 3	22.75	9.53
GROUP 4	23.75	9.53

PAINTER CLASSIFICATIONS

GROUP 1 - Brush & Roller

GROUP 2 - Plasterers

GROUP 3 - Spray; Sandblast; Power Tools; Waterblast; Steamcleaning; Brush & Roller of Mastics, Creosotes, Kwinch Koate & Coal Tar Epoxy

GROUP 4 - Spray of Mastics, Creosotes, Kwinch Koate & Coal Tar Epoxy

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PAIN0456-003 05/01/2005

ALLEN, BUTLER, LOGAN, MUHLENBERG, SIMPSON, TODD & WARREN COUNTIES:

	Rates	Fringes
PAINTERS:		
BRIDGES, LOCKS & DAMS		
Brush & Roller	20.78	6.45
Spray; Sandblast; Power Tools;		
Waterblast & Steam Cleaning	21.78	6.45
ALL OTHER WORK		
Brush & Roller	16.78	6.45
ALL OTHER WORK		
Spary; Sandblast; Power Tools;		
Waterblast & Steam Cleaning	17.78	6.45

ALL OTHER WORK – HIGH TIME PAY
Over 35 feet (up to 100 feet) - $1.00 above base wage
100 feet and over - $2.00 abve base wage

PAIN0500-002 05/01/2005

CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
PAINTERS:		
Bridges & Dams	23.25	7.80
All Other Work	17.00	7.80

Waterblasting units with 3500 PSI and abaove - $.50 premium
Spraypainting and all abrasive blasting - $1.00 premium
Work 40 ft. and above ground level - $1.00 premium

PLUM0107-003 01/01/2005

ALLEN, BUTLER, EDMONSON, SIMPSON & WARREN COUNTIES:

	Rates	Fringes
Plumbers and Pipefitters	26.31	10.61

PLUM0184-002 07/01/2005

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
PLUMBERS & STEAMFITTERS	26.18	10.95

PLUM0522-003 01/01/2005

ALLEN, BUTLER, EDMONSON, SIMPSON & WARREN COUNTIES:

	Rates	Fringes
PLUMBER; STEAMFITTERS	26.31	10.61

PLUM0633-002 07/01/2005

DAVIESS, HANCOCK, HENDERSON, HOPKINS, LOGAN, MCLEAN, MUHLENBERG, OHIO, TODD, UNION & WEBSTER COUNTIES:

	Rates	Fringes
PLUMBERS/PIPEFITTERS	25.42	8.85

TEAM0089-003 03/31/2005

TRUCK DRIVERS:

	Rates	Fringes
GROUP 1 ALLEN, BUTLER, EDMONSON, LOGAN, SIMPSON & WARREN	17.54	10.84

COUNTIES:		
GROUP 2	17.87	10.84
ALLEN, BUTLER, EDMONSON, LOGAN, SIMPSON & WARREN COUNTIES:		
GROUP 3	17.94	10.84
ALLEN, BUTLER, EDMONSON, LOGAN, SIMPSON & WARREN COUNTIES:		
GROUP 4	17.95	10.84
ALLEN, BUTLER, EDMONSON, LOGAN, SIMPSON & WARREN COUNTIES:		
GROUP 5	18.00	10.84
ALLEN, BUTLER, EDMONSON, LOGAN, SIMPSON & WARREN COUNTIES:		
Group 1	17.54	10.84
Group 2	17.87	10.84
Group 3	17.94	10.84
Group 4	17.95	10.84
Group 5	18.00	10.84

BALLARD, CALLOWAY, CALDWELL, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, TODD & TRIGG COUNTIES:

	24.20	4.15

BALLARD, CALLOWAY, CALDWELL, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, TODD & TRIGG COUNTIES:

Group 1	23.89	4.15

BALLARD, CALLOWAY, CALDWELL, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, TODD & TRIGG COUNTIES:

Group 2	24.12	4.15

BALLARD, CALLOWAY, CALDWELL, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, TODD & TRIGG COUNTIES:

Group 3	24.19	4.15

BALLARD, CALLOWAY, CALDWELL, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, TODD & TRIGG COUNTIES:

Group 4	24.20	4.15

BALLARD, CALLOWAY, CALDWELL, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, TODD & TRIGG COUNTIES:

Group 1	23.89	4.15
Group 2	24.12	4.15
Group 3	24.19	4.15

Group 4	24.20	4.15

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

	19.46	9.20

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

Group 1	19.23	9.20

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

Group 2	19.46	9.20

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

Group 3	19.53	9.20

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

Group 4	19.54	9.20

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

	19.54	9.20
Group 1	19.23	9.20
Group 2	19.46	9.20
Group 3	19.53	9.20
Group 4	19.54	9.20

TRUCK DRIVER CLASSIFICATIONS FOR ALLEN, BUTLER, EDMONSON, L OGAN, SIMPSON & WARREN COUNTIES

GROUP 1 – Greaser, Tire Changer

GROUP 2 – Truck Mechanic

GROUP 3 – Single Axle Dump; flat Bed; all Terrain vehicles when use to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Driver of Distributors; Mixer All Types

GROUP 4 – Winch and A-Frame when used in transporting materials; Ross Carrier; Fork Lift when used to transport building materials; Driver on Pavement Breaker

GROUP 5 – Euclid and Other Heavy Earth Moving Equipment; low Boy; Articulator Cat; Five Axle Vehicle

TRUCK DRIVER CLASSIFICATIONS FOR BALLARD, CALLOWAY, CALDWELL, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, TODD & TRIGG COUNTIES:

GROUP 1 – Greaser, Tire Changer

GROUP 2 – Truck Mechanic

GROUP 3 – Single Axle Dump; flat Bed; all Terrain vehicles when use to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Driver of Distributors; Mixer All Types

GROUP 4 – Euclid and Other Heavy Earth Moving Equipment; low Boy; Articulator Cat; Five Axle Vehicle; Winch and A-Frame when used in transporting materials; Ross Carrier

TRUCK DRIVER CLASSIFICATION FOR DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

GROUP 1 - Greaser, Tire Changer

GROUP 2 - Truck Mechanic

GROUP 3 - Single Axle Dump; Flatbed; All Terrain Vehicle when used to haul materials; Semi-Trailer or Pole Trailer when used to pull building materials & equipment; Tandem Axle Dump; Driver of Distributors; Mixer All Types

GROUP 4 - Euclid, Other Heavy Earth moving Equipment & Lowboy; Articulator Cat; 5 Axle Vehicle; Winch & A-Frame when used in transporting materials; Ross Carrier; Fork Lift Truck when used to transport building materials; Drivers on Pavement Breaker

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

General Decision Number: TN030004 01/20/2006 TN4

Superseded General Decision No. **TN020004**

State: Tennessee

Construction Type: Heavy

Counties: Anderson, Blount, Carter, Cheatham, Davidson, Dickson, Fayette, Hamilton, Hawkins, Knox, Loudon, Madison, Marion, Montgomery, Robertson, Rutherford, Sevier, Shelby, Sullivan, Sumner, Tipton, Unicoi, Union, Washington, Williamson and Wilson Counties, in Tennessee

HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	06/13/2003
1	05/28/2004
2	06/18/2004
3	03/11/2005
4	04/15/2005
5	06/03/2005
6	11/18/2005
7	01/20/2006

BOIL0453-003 01/01/2005

	Rates	Fringes
Boilermaker	23.93	14.92

CARP0074-002 05/01/2004

HAMILTON COUNTY

Carpenter (Including Form Work)	18.31	5.10

CARP0223-001 05/01/2004

CHEATHAM, DAVIDSON, DICKSON, MONTGOMERY, ROBERTSON, RUTHERFORD, SUMNER, WILLIAMSON, AND WILSON COUNTIES

Carpenter (Including Form Work)	18.36	6.80

ELEC0175-003 06/01/2005

HAMILSON COUNTY

Electrician	25.40	7.38

ELEC0175-005 12/01/2003

EXCEPT: SHELBY COUNTY

Lineman	22.05	2.45 + 14.5%

ELEC0429-005 09/01/2003

Davidson

Electrician	21.60	6.63

ELEC0474-005 08/01/2003

SHELBY COUNTY

Linemen	22.15	8.49

ELEC0760-002 06/01/2005

ANDERSON (EXLUDING OAKRIDGE CITY), BLOUNT, KNOX, LOUDON, SEVIER AND UNION COUNTY

Cable Splicer	20.19	4% + 7.10
Electrician	19.69	4% + 7.10

ELEC0934-001 06/01/2005

CARTER, HAWKINS, SULLILVAN, UNICOI AND WASHINGTON COUNTIES

Electricians:		
Electrical contracts $1,000,000 and over	17.79	3.90+19%
Electrical contracts $1,000,000 and over	17.79	3.90+19%
Electrical contracts less than $1,000,000	15.46	4.51+6%5.50

ENGI0369-003 07/01/2005

CHEATHAM, DAVIDSON, DICKSON, FAYETTE, MADISON, MONTGOMERY, ROBERTSON, RUTHERFORD, SHELBY, STEWART, SUMNER, TIPTON, WILLIAMSON AND WILSON COUNTIES

Power Equipment Operator Bulldozer Operator; Hydrauliic Crane Operator Dump Truck Operator	20.57	7.60

ENGI0917-006 05/01/2005

ANDERSON, BLOUNT, CARTER, HAMILTON, HAWKINS, KNOX, LOUDON, MARION, SEVIER, SULLIVAN,UNICOI, UNION AND WASHINGTON COUNTIES

Power Equipment Operators; Bulldozer Operator Dump Truck Operator	20.67	7.20

Hydraulic Crane Operator	22.39	7.20

SUTN2003-010 09/10/2003

Cement Mson/concrete Finisher	10.00	
Laborer, Unskilled	10.14	
Operating Engineer		
Backhoe	13.77	1.46
Excavator	12.50	
Farm Tractor	9.50	
Grader	14.00	
Loader	15.76	4.95
Pipelayer	10.93	
Truck Driver	11.48	1.21

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

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Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

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Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

SCOPE OF WORK
FIRING RANGE CONSTRUCTION & DEVELOPMENT, RANGES 9, 11, 13, 14, 23, & 36,
FORT CAMPBELL, KENTUCKY
PROJECT NUMBER: DC00054-6J
PROJECT NUMBER: DC00004-6J
PROJECT NUMBER: DC00005-6J
PROJECT NUMBER: DC00006-6J
PROJECT NUMBER: DC00007-6J

1 **SCOPE:** The work covered by these specifications consists in furnishing all plans, labor, equipment, appliances, and materials in performing all operations in connection with the requirement for Firing Range Construction and Development at Ranges 9, 11, 13, 14, 23 and 36, in strict accordance with these drawings, specifications and special conditions which are subject to the terms and conditions of this contract.

2 EXISTING CONDITIONS:

2.1 DC-00054-6J: Three (3) lanes for one M240/M249 machine gun range on Range 11, five (5) lanes of zero range on Range 11, tower, public address system, and electrical service connection.

2.2 DC-00004-6J: Fourteen (14) lanes for one modified record fire course on Ranges 13 and 14, eight (8) lanes for one combat pistol qualification course on Range 13/14. Section 3.1 contains descriptions of the work for these ranges. One bleacher enclosure is required on Range 15.

2.3 DC-00005-6J: Range 9, construct eight (8) lanes for one combat pistol qualification course as described in Section 3.2 of this Scope of Work.

2.4 DC-00006-6J: Range 23, construct eight (8) lanes for one combat pistol qualification course as listed in Section 3.3 of this Scope of Work.

2.5 DC-00007-6J: Range 36, construct eight (8) lanes for one combat pistol qualification course, three lanes for one M240/M249 machine gun qualification range. Construct five (5) lanes of 10m zero range on Range 36B as described in Section 3.4 of this Scope of Work.

WORK TO BE DONE:

3 DC 00054-6J, Ranges 11

3.1 Range 11 SITE DEVELOPMENT

3.1.1 On Range 11, Contractor shall construct three (3) lanes of M240/M249 machine gun qualification range at Range 11.

3.1.2 Grade areas where service roads are located to a depth of six inches. The grade shall follow existing ground surface. Soil excavated may be used for target coffin backfill. The approximate quantity is 4,200 square yards.

3.1.3 Furnish and place approximately 770 cubic yards of gravel for 8 foot wide service roads with a thickness of six inches to the targets consisting of Gradation Number 57 according to the latest edition of Kentucky Transportation Cabinet Specifications for Road and Bridge Construction. The service roads shall be constructed as indicated on the drawings. This includes the road accessing the range area from Market Garden Road to the south side of the firing line berm.

3.1.4 Furnish and place approximately 385 cubic yards of dense graded aggregate (DGA) on top of

the Number 57 stone to a depth of 3 inches and a width of eight feet. The gradation shall conform to Dense Graded Aggregate according to the latest edition of Kentucky Transportation Cabinet Specifications for Road and Bridge Construction.

3.1.5 Furnish and place approximately 113 square yards of filter fabric under the single and double arm target coffins. The fabric shall meet the latest requirements of Kentucky Transportation Cabinet Standard Specification for Road and Bridge Construction Section 845, Geotextile Fabrics for Type III fabric.

3.1.6 Furnish and install nine single arm concrete coffins at distances specified in drawings up to and including the 300 meter target line. The target coffins may be precast concrete, and shall have a minimum twenty eight day compressive strength (f'c) of 4,000 psi. Reinforcing steel shall consist of grade 60, and shall conform to the latest requirements of ASTM A 615. Furnish and install nine ground rods behind the coffins as indicated on the drawings. The rods shall be copper clad steel, ¾ inch diameter, and eight feet long. If precast, contractor shall furnish engineer a shop drawing from manufacturer depicting the dimensions shown on the drawings. The shop drawing shall also list the minimum specified twenty eight day strength and reinforcing steel grade.

3.1.7 Furnish and place nine railroad ties with the dimensions conforming to the single arm coffins as shown on the drawings.

3.1.8 Furnish and install 36 double arm concrete coffins to be installed beginning at the 400 meter target line. The target coffins at 800 meter target line in each firing lane will receive an array of four double arm coffins. The array is included in this quantity. The elevation of the target coffins shall be adjusted to avoid obstructing view from the firing line. Ground rods shall be installed as described in Section 3.1.5. If precast, contractor shall provide to engineer a shop drawing from manufacturer depicting the dimensions shown on the drawings. The shop drawing shall also list the minimum specified twenty eight day strength and reinforcing steel grade.

3.1.9 Furnish and place 36 railroad ties with the dimensions conforming to the double arm coffins as shown on the drawings.

3.1.10 Place and compact target mounds of approximately 300 cubic yards to the front and flank of each target coffin, both single arm and double arm, and to the lines shown on the drawings. The soil for the mounds shall consist of cohesive material and may be obtained on site or transported from a borrow source designated and approved by Range Control. The material shall be compacted using manually directed power tamping devices in lifts not to exceed eight inches. The fill material shall not contain frozen soil, sod, brush, or roots. Stones larger than one and one half inches in size shall be removed from the fill prior to compaction.

3.1.11 Construct three sand-filled firing boxes for each firing position at Range 11. The boxes shall be constructed of four railroad ties configured in a square shape at the dimensions shown on the drawings. Each corner shall be fastened with two double hot dip galvanized 12 inch long, 5/16 inch diameter spiral spikes as shown on the drawings. The interior of the box shall be filled with sand.

3.1.12 Install two range limitation markers on the flanks at the 800 meter target line. The markers shall be of exterior grade plywood, and shall be painted as indicated in the drawings.

3.1.13 Furnish and place approximately 2,470 lineal feet of silt fence shall be placed at the locations indicated on the drawings. At each end of the silt fence, the ends shall be curled slightly uphill. Silt fences shall be discontinued at areas where drainage ditches cross the path of the silt fence. At these locations, a fiber roll consisting of coconut fibers shall be extended across the ditch. The diameter shall be twelve inches and shall extend across the bottom width and up the sides. The rolls shall be staked every twelve inches+/-.

3.1.14 Install 5 sand-filled firing boxes with the dimensions specified in Section 3.1.10 on the 10 meter zero range at Range 11.

3.1.15 Furnish and place approximately 36 cubic yards of granular drainage material to be placed under coffins to the lines shown on the drawings. The gradation shall consist of Gradation No. 57 according to the latest edition of Kentucky Transportation Cabinet Specifications for Road and Bridge Construction.

3.1.16 Furnish and install approximately 60 lineal feet of 24 inch diameter corrugated steel culvert pipe at the locations identified on the drawings. Each culvert shall have inlet and outlet protection consisting of rip rap conforming to the requirements in Attachment 1 for Class A1 rip rap. Filter fabric conforming to the requirements of Section 3.1.2 shall be placed under the rip rap. Rip rap shall not be placed in the line of fire to preclude ricochet rounds. The culvert shall be aligned within the existing drainage ditch flowline and shall conform to existing ditch grade. A minimum depth of cover over the top of culvert shall be twelve inches.

3.1.17 Steps shall be constructed in the firing line berm for access to the firing boxes. The steps may be fabricated out of treated lumber or concrete blocks. The rise shall be eight inches and the tread shall be twelve inches. Hand rails shall be provided. The step configuration at Range 10 may be examined for reference.

3.2 Range 11 CONROL TOWER

3.2.1 Excavate to the lines shown on the drawings for concrete pier and footings. Furnish and place about 11 cubic yards of concrete for tower footing. The twenty eight day compressive strength (f'c) shall be 4,000 psi.

3.2.2 Place reinforcing steel at the location indicated on the drawings. Reinforcing steel shall consist of grade 60, and shall conform to the latest requirement of ASTM A615.

3.2.3 Construct a range control tower with structural steel members as shown in the drawing sheets S0 through S5. The structural steel shapes and grade shall be as specified in the drawings. The structural steel components and connections shall be erected with commonly accepted and best general practices in the steel erecting trade.

3.2.4 Furnish and install approximately 120 lineal feet of perimeter fence around control tower at the location indicated in the drawings.

3.2.5 Insulation for the control tower walls shall be foam with insulation rating of R-11. Windows shall be installed as indicated on Sheets A1 and A2.

3.2.6 Structural steel shall be painted with a primer coat consisting of inorganic zinc-rich 1-component, 2-component, or 3-component self-curing type. All steel shall also have a finish coat consisting of vinyl resin paint. Contractor shall furnish to engineer manufacturer's product data sheets which shall indicate that all paints, primer and finish paint are compatible with each other and with structural steel.

3.3 Range 11 ELECTRICAL

3.3.1 PROJECT DESCRIPTION: Prepare and furnish all submittals including as- built drawing(s), product specifications, operation manuals, construction costs, and others, as required, complete. Furnish all labor, equipment, materials, and transportation for this installation as described. To accomplish this objective, under the provision of Section C of Contract, the contractor shall:

3.3.2 Make site visit prior to bid and gather all data/ information related to the project. Contractor(s) shall determine before his bid, if any additional work is required or not. Bid prices shall include all costs due to additions or alteration, if required for the new installation, complete. See Attachments 2 and 3.

3.3.3 Establish a work schedule, prepare submittals as per the specification of contract and submit six (6) copies to Contracting Officer (CO) for his/her approval. Contractors shall neither purchase nor order any materials until he receives approval from CO.

3.3.4 Draw new single phase 7.2kv primary and neutral, aerial from existing 3-phase primary running on Market Garden Road, Fort Campbell, to include new wood pole, insulators, guy wire, transformer, cut-out, lightning arrestor, and neutral, complete. Tap off a new single service phase three wire 120/240 volts service drop (aerial) to new Control Tower and then connect to new service entrance, weather head, bracket, ground wire as required by NEC 2005. See General Site Plan, E1 for details.

3.3.5 Install light and power outlets as specified as scheduled, complete. Use EMT inside and RGS conduit outside w/THHN wires. Furnish fixtures, accessories or equipment NEMA 1 inside and NEMA 3R outside as shown on drawings. Furnish control boxes, receptacle outlets, lighting fixtures, speakers, security lights, panel/junction boxes, grounding/bonding , lightning protection, telephone mains, and others, complete. See Electrical Plan, sheet E2 for details.

3.3.6 Provide and install quartz flood lights and red flood lights mounted on wood poles 35/5 (outside) to include underground wiring w/RGS conduit from outside NEMA 3R junction box at the tower. Ground poles caps, and light fixtures or light brackets as per NEC requirements. Photocell at the fixture and control switches at the tower shall be provided accordingly. See light fixture schedule on Electrical Plan E4.

3.3.7 Install lightning protection of roof, structure or exterior enclosures (metal), if any. Construct obstruction light lines over the roof to include fixtures, etc. Ground bleachers plans, air terminals, or others by perimeter ground as shown on sheet E3. Contractor shall draw surface/underground telephone and cable lines up to the terminal boxes as found. Verify actual requirements (size and number) with COR before installation.

3.3.8 The new installation shall conform to all requirements of National Electric Codes (NEC), 2005. After work is completed, Contractor shall submit all test reports (continuity test, operation test, load test, and others to COR.

3.3.9 Finish field-applied paint on exposed surface of wiring/conduit or boxes, etc., complete to match existing color of building wall or roof or any equipment, for which those exposed wirings would be done.

3.3.10 Supply all materials, labor and equipment as required to perform ancillary work indicated and /or specified in Attachments 2 and 3 included in this Scope of Work.

3.3.11 Furnish and install public address system and speakers and all wire and appurtenances. The public address system shall consist of the following items:

- Three outdoor speakers rated at 15 watts each, such as manufactured by Atlas, Inc., Model AP-15T,
- One amplifier shall be as manufactured by Bogen Inc., Model GS-250,
- One 2-channel field mixer as manufactured by Crown Audio, Inc., Model FMX-20
- One wired microphone,
- 100 lineal feet of direct burial 14/2 cable for speakers.

3.4 DC-00004-6J RANGE 13/14 MODIFIED RECORD FIRE (MRF) AND COMBAT PISTOL

QUALIFICATION COURSE (CPQC)

3.4.1 RANGE 13/14 SITE DEVELOPMENT FOR MRF AND CPQC

3.4.2 Furnish and place approximately 42 cubic yards of Granular Drainage Material at locations and lines indicated on the drawings. This material will be used under the concrete target coffins. The gradation shall conform to Gradation No. 57 as specified in the latest requirements of Kentucky Transportation Cabinet Standard Specifications for Road and Bridge Construction.

3.4.3 Furnish and place approximately 260 square yards of filter cloth at locations shown on the drawings. The filter fabric shall meet the latest requirements of Kentucky Transportation Cabinet Standard Specification for Road and Bridge Construction Section 845, Geotextile Fabrics for Type III fabric.

3.4.4 Furnish and install 182 concrete single arm stationary infantry target coffins with the dimensions and at the locations identified on the drawings for both the MRF and CPQC. The target coffins may be precast concrete, and shall have a minimum twenty eight day compressive strength of 4,000 psi. Reinforcing steel shall consist of grade 60, and shall conform to the latest requirements of ASTM A615.

If the items are proposed are to be precast, contractor shall furnish engineer a shop drawing from manufacturer depicting the dimensions shown on the drawings. The shop drawings shall list the minimum specified twenty eight day strength and reinforcing steel grade. Ground rods shall be installed and conform to the requirements in Section 3.1.5.

3.4.5 Furnish and place 14 walk-in foxhole firing positions at the locations identified on the drawings. The estimated quantity is approximately 30 cubic yards. The concrete shall have a twenty eight day strength of 4,000 psi. Reinforcing steel shall consist of grade 60, and shall conform to the latest requirements of ASTM A615. Existing soil shall be excavated at each foxhole location. Place approximately 61 cubic yards of granular drainage material under foxholes. The gradation shall conform to Section 3.1.35.

The top of the walk-in foxhole wall shall be even with the top of the firing line berm. The existing soil may be used for target coffin backfilling if the contractor desires. Each walk-in fox hole shall have steps leading from the base of the foxhole up to the top. The rise shall be eight inches and the run shall be twelve inches. The steps may be fabricated from either treated lumber or concrete blocks. The step configuration on the MRF portion of Range 36 may be examined for reference.

3.4.6 Place and compact soil for target mounds of approximately 454 cubic yards on the MRF at the front and flank of each target coffin and to the lines shown on the drawings. The soil for the mounds shall consist of cohesive material and may be obtained on site or transported from a borrow source designated and approved by Range Control. The material shall be compacted using manually directed power tamping devices in lifts not to exceed eight inches. The fill material shall not contain frozen soil, sod, brush, or roots. Stones larger than one and one half inches in size shall be removed from the fill prior to compaction.

Place and compact target mounds of approximately 202 cubic yards on the CPQC at the front and flank of each target coffin and to the lines shown on the drawings. The soil for the mounds shall consist of cohesive material and may be obtained on site or transported from a borrow source designated and approved by Range Control. The material shall be compacted using manually directed power tamping devices in lifts not to exceed eight inches. The fill material shall not contain frozen soil, sod, brush, or roots. Stones larger than one and one half inches in size shall be removed from the fill prior to compaction.

3.4.7 Construct a 10 foot wide gravel access road to traverse through Ranges 13 and 14 at the location indicated on the drawings. The gravel road shall begin at the entrance of Range 14 and Market Garden Road and shall continue along the alignment as shown on the drawings. The gradation of the gravel shall consist of a six inch thick base with Number 57 Stone and a three inch thick surface layer of the DGA gradation according to the latest edition of Kentucky Transportation Cabinet Specifications for Road and Bridge Construction. The

estimated quantity for Number 57 is 120 cubic yards and 60 cubic yards for the DGA.

3.4.8 Grade target service road areas within Range 13/14 to a depth of six inches across eight foot wide service road width. The grade shall conform to the natural ground slope. Soil excavated may be used for target coffin backfill. The estimated quantity of grading is approximately 6,050 square yards.

3.4.9 Furnish and place approximately 1,110 cubic yards of gravel target service roads consisting of Gradation Number 57 according to the latest edition of Kentucky Transportation Cabinet Specifications for Road and Bridge Construction. The roads shall be 8 feet wide, with a gravel thickness of six inches. The service roads will be situated behind all target lines and at the down range toe of the firing line berm on the MRF range to facilitate servicing and accessing targets.

3.4.10 Furnish and place approximately 560 cubic yards of dense graded aggregate (DGA) consisting of densely graded aggregate gradation according to the latest edition of Kentucky Transportation Cabinet Specifications for Road and Bridge Construction. The thickness shall be three inches and width of eight feet. This will be placed over the top of the Number 57 stone specified above.

3.4.11 Seed, mulch, and fertilize approximately 30 acres according to Attachment 1.

3.4.12 Install two range limitation markers at the 300 meter target line. The markers shall be fabricated from exterior grade plywood and shall be painted with red and white color scheme as indicated in the drawings.

3.4.13 Furnish and install approximately 20 lineal feet of 12 inch diameter corrugated steel pipe culverts at the locations indicated on the drawings. The inlet and outlet of each pipe shall have rip protection conforming to the gradation for Class A-1 rip rap listed in Attachment 1. Approximately 4 cubic yards of rip rap is estimated. Type III filter fabric shall be in place prior to the placement of the rip rap. Approximately 10 square yards of filter fabric is estimated. Upstream and downstream pipe invert elevations are labeled on the drawings. The pipes shall extend under the new gravel service road and discharge immediately to the existing concrete pipes.

3.4.14 Clean out accumulated sediment inside existing concrete outlet pipes as shown on the drawings. Methods of sediment removal may involve hand digging and possibly the use of water pressure to loosen and blast out accumulated sediment.

3.5 Range 13 CONROL TOWER

3.5.1 Construct a range control tower with structural steel members as shown in the drawing sheets S0 through S5.

3.5.2 Excavate to the lines shown on the drawings for concrete pier and footings.

3.5.3 Place reinforcing steel at the location indicated on the drawings. Reinforcing steel shall consist of grade 60, and shall conform to the latest requirement of ASTM A615.

3.5.4 Furnish and place concrete for tower footing. The twenty eight day compressive strength (f’c) shall be 4,000 psi.

3.5.5 Install approximately 120 lineal feet of fence around the control tower at the location indicated on the drawings. The fence shall have the dimensions indicated on the drawings.

3.5.6 Insulation for the control tower walls shall be foam with insulation rating of R-11.

3.5.7 Windows and other interior components shall be installed as indicated on Sheets A1 and A2. A work table shall also be constructed and provided as shown on Sheet A1.

3.5.8 Structural steel shall be painted with inorganic zinc-rich 1-component, 2-component, or 3-component self-curing type primer coat. All steel shall also have a finish coat consisting of vinyl resin paint. Contractor shall furnish to engineer manufacturer's product data sheets stating that all paints, primer and finish paint, are compatible with each other and with structural steel. Finish coat color shall be white.

3.5.9 Furnish and install public address system in the control tower. The public address shall consist of the following:

- Eighteen outdoor speakers rated for a power output of 15 watts per speaker as manufactured by Atlas, Inc., Model number AP-15T,
- One amplifier as manufactured by Crown Audio, Model number CH4,
- One 2-channel field mixer as manufactured by Crown Audio, Model number FMX 20,
- One wired microphone,
- 1,700 lineal feet of direct burial 14/2 cable for speaker, Model number 8Q226.

3.6 Range 13 BLEACHER ENCLOSURE

3.6.1 Construct wood frame bleacher enclosure, metal covered on three sides and top. The width of each shall be 34 feet side to side, with an 18 foot depth, front to rear. The maximum height of the structure shall be fifteen feet from the bottom of the truss to the grade.

3.6.2 Corner posts, (4 each), and center posts (2 each), shall be 8" by 8" by 18 feet long pressure treated yellow pine, with three feet of the post set in concrete below grade, exposing fifteen feet above grade to bottom of truss chord.

3.6.3 Install 4"by 6" by 18 feet long line posts around structure, spaced (5) five feet +/- on center along both ends and rear wall. The base of posts shall be set in concrete with the tops of the posts notched and bolted to each pair of laminated 2"by 12" support beams spanning the front and rear. The timbers shall be fastened together with galvanized deck screws to prevent separation of timbers. All timber exposed to weather shall be pressure treated, southern yellow pine.

3.6.4 Furring strips shall be placed around back and end walls to support 26 gauge box rib metal siding. Furring strips shall be pressure treated 2" by 4" placed on 24 inch centers for best support of siding. Exterior wall siding shall be the colors indicated on the drawings. Installation shall be with color matched screws per manufacturer recommendation.

3.6.5 Corner trim molding and rear roof flashing shall be a color matched to the siding. The ridge cap trim/flashing shall match the colors of the existing bleacher enclosure.

3.6.6 Roof trusses shall be fabricated in a shed roof design totaling 18 feet across support posts, with an additional 36 inches from overhang. Making the total length approximately 21 feet. Truss design shall be by manufacturer design to best support the 18 feet front to rear span. Truss shall be 36 inches tall at the highest point along the front laminated beam. The spacing of the trusses shall be 24 inches. Each truss connection to the laminated beams shall have two uplift connectors attached. Two uplift connectors shall be used at locations shown on the drawings. The connectors shall be able to withstand 90 mile per hour wind speed. The dimensions of each tie shall be eight inches long, 1-1/4 inches wide, and shall have a thickness of 18 gauge. Contractor shall submit product data sheets confirming the suitability of withstanding 90 mph wind speeds.

3.6.7 Furring strips required to support metal roofing shall also be pressure treated 2"by 4" yellow pine placed at 24 inch centers. The 26 gauge box rib roofing color shall be as required by Range Control.

3.7 Range 15 BLEACHER ENCLOSURE

3.7.1 Construct wood frame bleacher enclosure, metal covered on three sides and top. The width of each shall be 34 feet side to side, with an 18 foot depth, front to rear. The maximum height of the structure shall be fifteen feet from the bottom of the truss chord to the grade.

3.7.2 Corner posts, (4 each), and center posts (2 each), shall be 8" by 8" by 18 feet long pressure treated yellow pine, with three feet of the post set in concrete below grade, exposing fifteen feet above grade to bottom of truss chord.

3.7.3 Install 4"by 6" by 18 feet long line posts around structure, spaced (5) five feet +/- on center along both ends and rear wall. The base of posts shall be set in concrete with the tops of the posts notched and bolted to each pair of laminated 2"by 12" support beams spanning the front and rear. The timbers shall be fastened together with galvanized deck screws to prevent separation of timbers. All timber exposed to weather shall be pressure treated, southern yellow pine.

3.7.4 Furring strips shall be placed around back and end walls to support 26 gauge box rib metal siding. Furring strips shall be pressure treated 2" by 4" placed on 24 inch centers for best support of siding. Exterior wall siding shall be the colors indicated on the drawings. Installation shall be with color matched screws per manufacturer recommendation.

3.7.5 Corner trim molding and rear roof flashing shall be a color matched to the siding. The ridge cap trim/flashing shall match the colors of the existing bleacher enclosure.

3.7.6 Roof trusses shall be fabricated in a shed roof design totaling 18 feet across support posts, with an additional 36 inches from overhang. Making the total length approximately 21 feet. Truss design shall be by manufacturer design to best support the 18 feet front to rear span. Truss shall be 36 inches tall at the highest point along the front laminated beam. The spacing of the trusses shall be 24 inches. Each truss connection to the laminated beams shall have two uplift connectors attached. Two uplift connectors shall be used at locations shown on the drawings. The connectors shall be able to withstand 90 mile per hour wind speed. The dimensions of each tie shall be eight inches long, 1-1/4 inches wide, and shall have a thickness of 18 gauge. Contractor shall submit product data sheets confirming the suitability of use with 90 mph wind speeds prior to installation.

3.7.7 Furring strips required to support metal roofing shall also be pressure treated 2"by 4" yellow pine placed at 24 inch centers. The 26 gauge box rib roofing color shall match colors of existing bleacher enclosures on the installation. Contractor shall verify exterior color with Range Control and /or Contracting Officer's representative.

3.8 Range 13 ELECTRICAL

3.8.1 PROJECT DESCRIPTION: Prepare and furnish all submittals including as- built drawing(s), product specifications, operation manuals, construction costs, and others, as required, complete. Furnish all labor, equipment, materials, and transportation for this installation as described. To accomplish this objective, under the provision of Section C of Contract, the contractor shall:

3.8.2 Make site visit prior to bid and gather all data/ information related to the project. Contractor(s) shall determine before his bid, if any additional work is required or not. Bid prices shall include all costs due to additions or alteration, if required for the new installation, complete. See Attachments 2 and 3.

3.8.3 Establish a work schedule, prepare submittals as per the specification of contract and submit six (6) copies to Contracting Officer (CO) for his/her approval. Contractors shall neither purchase nor order any materials until he receives approval from CO.

3.8.4 Draw new single phase 7.2kv primary and neutral, aerial from existing 3-phase primary running on Market Garden Road, Fort Campbell, to include new wood pole, insulators, guy wire, transformer, cut-out, lightning arrestor, and neutral, complete. Tap off a new single service phase three wire 120/240 volts service

drop (aerial) to new Control Tower and then connect to new service entrance, weather head, bracket, ground wire as required by NEC 2005. See General Site Plan, E1 for details.

3.8.5 Install light and power outlets as specified as scheduled, complete. Use EMT inside and RGS conduit outside w/THHN wires. Furnish fixtures, accessories or equipment NEMA 1 inside and NEMA 3R outside as shown on drawings. Furnish control boxes, receptacle outlets, lighting fixtures, speakers, security lights, panel/junction boxes, grounding/bonding , lightning protection, telephone mains, and others, complete. See Electrical Plan, sheet E2 for details.

3.8.6 Provide and install quartz flood lights and red flood lights mounted on wood poles 35/5 (outside) to include underground wiring w/RGS conduit from outside NEMA 3R junction box at the tower. Ground poles caps, and light fixtures or light brackets as per NEC requirements. Photocell at the fixture and control switches at the tower shall be provided accordingly. See light fixture schedule on Electrical Plan E4. Overhead wiring to tower is not to overlap the 600 yard firing line on RNG 14 (i.e. the wire needs to come across the berm at the rear of RNG 13)

3.8.7 Install lightning protection of roof, structure or exterior enclosures (metal), if any. Construct obstruction light lines over the roof to include fixtures, etc. Ground bleachers plans, air terminals, or others by perimeter ground as shown on sheet E3. Contractor shall draw surface/underground telephone and cable lines up to the terminal boxes as found. Verify actual requirements (size and number) with COR before installation.

3.8.8 The new installation shall conform to all requirements of National Electric Code (NEC), 2005. After work is completed, Contractor shall submit all test reports (continuity test, operation test, load test), and others to COR.

3.8.9 Finish field-applied paint on exposed surface of wiring/conduit or boxes, etc., complete to match existing color of building wall or roof or any equipment, for which those exposed wirings would be done.

3.8.10 Supply all materials, labor and equipment as required to perform ancillary work indicated and /or specified in Attachments 2 and 3 included on this Scope of Work.

3.9 DC- 00005-6J RANGE 9 SITE DEVELOPMENT COMBAT PISTOL QUALIFICATION COURSE

3.9.1 On Range 9, Contractor shall construct eight lanes for a new Combat Pistol Qualification Course to include the following:

3.9.2 Furnish and place approximately 13 cubic yards of Granular Drainage Material at locations and dimensions indicated on the drawings. This material will be used under the concrete target coffins. The material shall consist of Gradation Number 57 in accordance with the latest edition of Kentucky Transportation Cabinet Standard Specifications for Road and Bridge Construction.

3.9.3 Furnish and place approximately 80 square yards of filter fabric at locations shown on the drawings. The filter fabric shall meet the requirements of Kentucky Transportation Cabinet Standard Specification for Road and Bridge Construction Section 845, Geotextile Fabrics for Type III fabric.

3.9.4 Install fifty six concrete single arm stationary infantry target coffins with the dimensions and at the locations identified on the drawings. The target coffins may be precast concrete, and shall have a minimum twenty eight day compressive strength of 4,000 psi. Reinforcing steel shall consist of grade 60, and shall conform to the latest requirements of ASTM A 615. Coffins shall be placed to have positive drainage outward. Furnish and install nine ground rods behind the coffins as indicated on the drawings. The rods shall be copper clad steel, ¾ inch diameter, and eight feet long.

If the proposed items are precast, contractor shall furnish engineer a shop drawing from manufacturer depicting the dimensions shown on the drawings. The shop drawing shall also list the minimum specified twenty eight day strength and reinforcing steel grade.

3.9.5 Furnish and place 56 railroad ties in front of the coffins as indicated on the drawings.

3.9.6 Furnish and place about 40 cubic yards of gravel for eight- foot wide gravel firing line. The gravel shall consist of Gradation Number 57 in accordance with the latest edition of Kentucky Transportation Cabinet Standard Specifications for Road and Bridge Construction. Firing line shall be forward of and at the base of the existing MRF firing line berm.

3.9.7 Furnish and install eight lane identification posts at each firing line on the CPQC. Each post shall be 4"x4", five feet long with three feet exposed above existing ground surface. The top of each post shall be capped with a 12" x12" section of exterior grade plywood ¾" thick. The tops shall be nailed or bolted into the top of the 4"x4" post. Lumber for the posts shall be pressure treated.

3.9.8 Place and compact target mounds of approximately 202 cubic yards at the front and flank of each target coffin and to the lines shown on the drawings. The soil for the mounds shall consist of cohesive material and may be obtained on site or transported in from a borrow source designated by Range Control. The material shall be compacted using manually directed power tamping devices in lifts not to exceed eight inches. The fill material shall not contain frozen soil, sod, brush, or roots. Stones larger than three inches in size shall be removed from the fill prior to compaction.

3.9.9 Seed and mulch each compacted mound and any disturbed areas in accordance with Attachment 1. The estimated area is 0.1 acre.

3.10 DC-00006-6J RANGE 23 SITE DEVELOPMENT COMBAT PISTOL QUALIFICATION COURSE

3.10.1 On Range 23, Contractor shall construct eight lanes of Combat pistol Qualification Course to include the following:

3.10.2 Furnish and place approximately 13 cubic yards of Granular Drainage Material at locations and dimensions indicated on the drawings. This material will be used under the concrete target coffins.

3.10.3 Furnish and place approximately 80 square yards of filter cloth at locations shown on the drawings. The filter fabric shall meet the requirements of Kentucky Transportation Cabinet Specifications for Road and Bridge Construction Section 845, Geotextile Fabrics for Type III fabric.

3.10.4 Install 56 concrete single arm stationary infantry target coffins with the dimensions and at the locations identified on the drawings. The target coffins may be precast concrete, and shall have a minimum twenty eight day compressive strength of 4,000 psi

If the items proposed are to be precast, contractor shall furnish engineer a shop drawing from manufacturer depicting the dimensions shown on the drawings. The shop drawings shall list the minimum specified twenty eight day strength and grade of reinforcing steel. Furnish and install 56 ground rods at each target coffin location. The rods shall be as specified in Section 3.1.5.

3.10.5 Furnish and place 56 railroad ties in front of the coffins as indicated on the drawings.

3.10.6 Furnish and place approximately 31 cubic yards of gravel for eight- foot wide gravel firing line. The gravel shall consist of Gradation Number 57 in accordance with the latest edition of Kentucky Transportation Cabinet Standard Specifications for Road and Bridge Construction.

3.10.7 Place and compact target mounds of approximately 202 cubic yards at the front and flank of each target coffin and to the lines shown on the drawings. The soil for the mounds shall consist of cohesive material and may be obtained on site or transported in from a borrow source designated by Range Control. The material shall be compacted using manually directed power tamping devices in lifts not to exceed eight inches. The fill material shall not contain frozen soil, sod, brush, or roots. Stones larger than three inches in size shall be removed from the fill prior to compaction.

3.10.8 Seed and mulch each compacted mound and disturbed areas in accordance with Attachment 1. The estimated quantity is 0.1 acre.

3.10.9 Furnish and install eight lane identification posts at each firing lane on the CPQC. Each post shall be 4”x4” in cross section, five feet long, and with three feet exposed above existing ground surface. The top of each post shall be capped with a 12”x12” section of exterior grade plywood 3/4” thick. The sections shall be nailed or bolted onto the top of the 4”x4” post. The lumber for the posts shall be pressure treated. Letters “A” through “H” shall be stenciled into the posts.

3.11 DC-00007-6J RANGE 36 SITE DEVELOPMENT FOR COMBAT PISTOL QUALIFICATION COURSE ,M240/249 QUALIFICATION COURSE and 10m MG Zero Range

3.11.1 Construct eight lanes of Combat Pistol Qualification Course and three lanes of M240/M249 machine gun qualification course.

3.11.2 Prepare the surface of the target service roads by grading a depth of six inches by eight feet wide at the locations of the target service roads. The estimated area is 2,060 square yards.

3.11.3 Haul and place approximately 342 cubic yards of Gradation Number 57 stone to a depth of six inches, 8 feet wide for target service roads shown on the drawings.

3.11.4 Furnish and place approximately 171 cubic yards of DGA stone to a depth of three inches at the target service road locations over the placed #57 stone.

3.11.5 Furnish and place approximately 60 cubic yards of Granular Drainage Material at locations and dimensions indicated on the drawings. This material will be used under the concrete target coffins, both single and double arm. The gravel shall conform to Gradation number 57 as specified in the latest edition of Kentucky Transportation Cabinet Standard Specifications for Road and Bridge Construction. This quantity includes CPQC and M240/M249 ranges.

3.11.6 Furnish and place approximately 200 square yards of filter cloth at locations shown on the drawings. The filter fabric shall meet the requirements of Kentucky Transportation Cabinet Section 845, Geotextile Fabrics for Type III fabric. This quantity includes the CPQC in addition to the M240/M249 ranges.

3.11.7 Install sixty five concrete single arm stationary infantry target coffins with the dimensions and at the locations identified on the drawings at CPQC and M240/M249 ranges. The target coffins may be precast concrete, and shall have a minimum twenty eight day compressive strength of 4,000 psi. Ground rods shall be placed as shown on the drawings, and shall conform to the requirements in Section 3.1.5.

If the items proposed are to be precast, contractor shall furnish engineer a shop drawing from manufacturer depicting the dimensions shown on the drawings. The shop drawings shall list the minimum specified twenty eight day strength and grade of reinforcing steel.

3.11.8 Furnish and install thirty three concrete double arm stationary infantry coffins with the dimensions and at the locations identified on the drawings for the M240 range. The target coffins may be precast concrete and shall have a minimum twenty eight day compressive strength (f’c) of 4,000 psi. Ground rods shall be placed as shown on the drawings, and shall conform to the requirements in Section 3.1.5.

If the items proposed are precast, contractor shall furnish engineer a shop drawing from manufacturer depicting the dimensions shown on the drawings. The shop drawings shall also list the minimum specified twenty eight day strength and grade of reinforcing steel.

3.11.9 Furnish and place approximately 31 cubic yards of gravel for eight- foot wide gravel firing line at CPQC. The gravel shall consist of Gradation Number 57 in accordance with the latest edition of Kentucky Transportation Cabinet Standard Specifications for Road and Bridge Construction.

3.11.10 Place and compact soil for target mounds of approximately 500 cubic yards at the front and flank of each target coffin, both single and double arm, to the lines shown on the drawings. The soil for the mounds shall consist of cohesive material and may be obtained on site or transported in from a borrow source designated by Range Control. The material shall be compacted using manually directed power tamping devices in lifts not to exceed eight inches. The fill material shall not contain frozen soil, sod, brush, or roots. Stones larger than one and one half inches in size shall be removed from the fill prior to compaction. See Section 3.4.19 for earthfill required for 700 and 750 meter target mounds.

3.11.11 Furnish and place 65 railroad ties conforming to the dimensions of the single arm target coffins as indicated on the drawings. This quantity includes the CPQC and M240 locations.

3.11.12 Furnish and place 33 railroad ties conforming to the dimensions of the double arm target coffins as indicated on the drawings.

3.11.13 Install two range limitation markers on the flanks of the machine gun range at the 800 meter target line. The markers shall be constructed out of exterior grade plywood, and shall have the dimensions listed in the drawings. The markers shall be painted in the red and white paint scheme as shown in the drawings.

3.11.14 Furnish and install three lane markers scribed with the numerals “1”, “2”, and “3”. The markers shall consist of exterior grade plywood and shall be painted with alternating black and white colors

3.11.15 Seed, mulch, and fertilize approximately eight acres of the double arm target layout area of the M240 range in accordance with Attachment 1. The CPQC shall also be seeded, mulched, and fertilized. The quantity for this portion is approximately 0.1 acre. Seed and mulch approximately 8 acres in the M240 area.

3.11.16 Construct five sand-filled firing boxes at the firing line for the zero range on Range 36B. The boxes shall conform to the requirements specified in Section 3.1.8 for Range 11.

3.11.17 Construct three sand-filled firing boxes at the firing line for the M240/M249 range. Each box shall be built to a minimum height of five feet above existing ground surface on the firing line berm with railroad ties. The ties shall be connected together with five double hot dipped galvanized spiral spikes on each side of the firing box. The spikes shall be twelve inches long and 5/16” diameter.

A stairway shall be constructed and connected to each firing box on the M240/M249 range. The lumber shall be pressure treated. The width of each step shall be six feet, and shall consist of pressure treated 2”x12” boards. The rise of the stairway shall be eight inches and run shall be 12 inches.

3.11.18 Excavate to the lines shown on the drawings. The grading shall start at the 600 meter target line where the proposed contours are depicted on the drawings. The excavated material may be used as earthfill for the target mounds. The estimated quantity of excavation is 3,000 cubic yards.

3.11.19 Construct four target mound arrays in each firing lane, for the placement of target coffins at the 750 meter target line. The soil used for construction shall consist of a cohesive soil such as clay, similar to that specified for target backfill. Each lift shall be compacted by at least three passes by a sheepsfoot compactor. The lifts shall be no greater than eight inches in thickness before compaction. Soils shall not be placed if it is saturated,

or if it contains stone or stone fragments larger than one and one half inches in size. The soil may taken from either on site or brought in from borrow areas. The approximate quantity for the arrays is 16,000 cubic yards.

Each mound shall be constructed to elevation 91.0 and shall have a top width and length of ten feet. The finished sideslopes shall be 3H: 1V.

In general, each target mound shall be spaced 33 feet (10 meters) from each other at the pattern shown on the drawings. The elevation and spacing may have to be adjusted to fit field conditions to avoid obscuring view from other target mounds.

Construct one target mound in each lane (three target mounds total) at the 700 meter target line to elevation 90.0, similar to Section 3.4.19. The estimated quantity for earthfill is approximately 600 cubic yards total for the three mounds.

Construct two target mounds at the locations indicated on the drawings at the 400 meter target line to elevation 94.0, similar to Section 3.4.19. The estimated quantity of earthfill for this area is 400 cubic yards.

3.11.20 Furnish and place approximately 1400 lineal feet of silt fence as shown on the drawings. The silt fence may be sliced or trenched into the ground. Additional length may be required by COR if it is determined that it is needed. Contractor shall remove silt fence when 95 percent of the seeded area has been stabilized. Fiber rolls shall be placed at locations where low points in the ground occur. The silt fence shall be discontinued, and the fiber roll shall be placed as described in Section 3.1.12.

4 SPECIAL CONDITIONS:

4.1 The Contractor is responsible for knowledge of and compliance with all environmental laws, regulations, and programs of this installation, the County, State and Federal agencies that relate to or may arise under the performance of this contract. Included, but not limited to its compliance with applicable standards for the prevention, control and abatement of environmental pollution in full cooperation with the Installation, Federal, State and Local Governments.

4.1.1 Penalty charges resulting from citations against Department of Defense, Department of the Army or Fort Campbell, Kentucky or its agents, officers or employees due to the Contractor's failure to comply with environmental laws, regulations and programs, that relate to or may arise under the performance of this contract may be deducted or offset by the Government from any monies due the Contractor, and with respect to such citations, the Contractor will further take any corrective or remedial actions as directed by such agencies.

4.2 The Contractor’s warranty shall last one (1) full year unless otherwise noted from the date of acceptance of the final unit completed under this contract. Any rework shall be done at no additional cost to the Government.

4.3 PERMITS:

4.3.1 Excavation: All contractors and their subcontractors shall be required to obtain an excavation permit from the government prior to performing rock or soil excavation. The contracting officer (CO) will discuss the excavating policy at the construction pre-work conference and will furnish the contractor the required forms. Should the policy not be addressed during the pre-work, the contractor shall still be responsible for obtaining the excavation permit from his CO and for coordinating with all signatory personnel listed on the form. The government reserves the right to assess monetary damages against any contractor for repair of damage to underground utilities when excavations are performed without the referenced permit.

4.3.2 TN/KY Construction Permits: (1) Construction Activity – Storm Water Discharges Notice of Intent, NOI, (2) National Pollution Discharge Elimination System Permit, NPDES. These permits have been pre-obtained by Fort Campbell Environmental office (POC Wayne Hinson @ 798-9784 or Dick Blackston @ 798-

9588) and require very little information from the contractor for individual construction jobs. Permit (1) & (2) must be posted at the job site. The contractor must also complete and document weekly inspections of sediment and erosion control devices, which must be submitted to Fort Campbell.

4.3.3 Electrical: No electric equipment shall be installed within or on any Fort Campbell building, structure, or premises, nor shall any alteration be made in any such existing equipment without first securing an Electrical Permit (FC Form 4183) from Fort Campbell Electrical Inspector in accordance with Fort Campbell Public Works Business Center Standing Operation Operating Procedure (SOP) 308, except as provided within said SOP. Copies of SOP and permits shall be obtained at PWBC, Operations and Maintenance Division, Building 867, 16th Street Fort Campbell, Kentucky.

4.4 Conduct & Dress: Workers shall be properly attired at all times. Full-length pants (no shorts), shirts (tee-shirt minimum), and proper shoes (no flip-flops, thongs, or open-toed sandals) are required. No smoking in buildings. Department of the Army Smoking Policy (AR 1-8) shall be observed. Smoking shall be permitted in designated areas only. Smoking allowed outside as long as butts, wrappers, packages, etc., are policed daily. The contractor shall ensure that all lunch and break times debris are contained and removed from the site at the end of each period and properly disposed of as specified. Profanity is strictly forbidden. Only necessary company operational vehicles shall be driven to project site. All privately owned vehicles shall be parked at contractor's storage area.

4.5 All debris, equipment, tools, supplies, etc., shall be removed or stored in such a manner as not to interfere with the use of the facility.

4.5.1 Disposition Of Materials: Disposal of materials and equipment is the responsibility of the contractor at locations as specified. No materials or equipment shall be removed from Government property without written permission from the proper authorities. Miscellaneous Metals and Scrap Rubber shall be delivered to DRMO for recycling. The metals can be steel, aluminum, brass, copper and bronze. Empty containers (55 gallon drums, 5 gallon cans, etc.) that have contained petroleum, antifreeze, paint, acid, etc. cannot be accepted as scrap metal and shall be emptied of any liquid contents in accordance with applicable regulations and then flatten and placed in dumpsters at the convenience centers.

4.6 All work shall be done during the hours of 7:30 a.m. to 4:00 p.m., Monday thru Friday unless coordinated through the COR. Contractor shall successfully complete a training course conducted by Range Control regarding unexploded ordinance (UNXO).

4.7 ENVIRONMENTAL ISSUES:

4.7.1 If hazardous chemicals or POL spills occur at the job site the Fire department and then the PWBC Environmental Division shall be notified immediately.

4.7.2 No liquids or hazardous waste created or used during construction of the facility shall be deposited in the landfill. Disposal of such waste shall be done in accordance with environmental regulations. Manifests for disposal must be coordinated through the DPW Environmental Division.

4.7.3 The Emergency Planning and Community Right-To-Know Act (EPCRA) requires that site specific information concerning hazardous chemicals use and releases be provided. The Contractor is required to maintain an inventory of hazardous materials. This inventory will be provided to PWBC Environmental Division prior to receipt of final payment.

4.7.4 Inventories of hazardous substances listed in the Act shall include quantities received, amount used, and quantities turned in for disposal. The amount that is not accounted for will be considered as quantities that were released to the environment. Based on this new requirement it is imperative that strict inventory controls be placed on hazardous substances that are being used on Fort Campbell. Questions in reference to the EPCRA can be directed to the Pollution Prevention Branch, Environmental Division, telephone 798-9769.

4.7.5 Contractor shall only perform routine maintenance on equipment at job site as would normally be expected to support normal daily construction activities (exp. addition of lubricants and fuel). Contractor shall take all necessary precautions to insure lubricants and fuel are not introduced into the environment by utilizing drip pans and/or other means to capture spilled or leaking petroleum products. Maintenance on equipment beyond that which would be expected for routine daily upkeep shall be done at the contractor's facilities, not at the project site.

4.8 **Contractor's Spill Plan**: Five copies of the contractor's spill plan shall be submitted. The Spill Plan shall include: list of responsible persons; emergency spill equipment on hand; list of hazardous materials and quantity normally at hand; material safety data (MSD) sheets; spill response and notification procedures; and location map or layout. For further information or guidelines in order to prepare Spill Plan, contact PWBC Environmental Division. The contractor shall not start any work until the Spill Plan is approved. If the contractor does not require a plan, the contractor shall apply to the Contracting Officer for an exception to this requirement.

4.9 **Storm Water Pollution Prevention Plan (SWPPP):** Any construction performed under this contract which disturbs 1 acre or greater of soil or a smaller site which shall have an erosion control impact on Fort Campbell must be accompanied by a SWPPP. A SWPPP can be applied for through the DPW Environmental Division. In addition, for sites which do not require a SWPPP, the contractor shall use all Best Management Practices (BMPs) to ensure no sediment leaves construction areas. Contractor shall ensure erosion control measures are installed and maintained to prevent such sediment from leaving the site.

4.10 The Fort Campbell Environmental Management System (EMS) requires the following of contractors and vendors;

4.10.1 Full compliance with environmental laws and regulations.

4.10.2 Knowledge of and conformance with operational controls for activities that can cause significant environmental impacts.

4.10.3 Demonstration of employee competence on the basis of appropriate and documented education, training, and experience.

4.10.4 Employee awareness of the actual or potential environmental impacts associated with their work.

4.10.5 Employee awareness of the potential consequences of departures from specified procedures.

EMS information is posted on the Fort Campbell internet at http://www.campbell.army.mil/envdiv/SustainabilityMenu.htm and on the Fort Campbell Internet Knowledge Share web site under category "SIMS".

4.11 Erosion Control Measures as indicated on the Project Drawings and/or as other wise directed by the Contracting Officer's Representative (COR) shall be in place prior to construction activities that will expose areas to erosion.

4.12 SCHEDULE OF WORK: The contractor shall note the following conditions:

4.12.1 The contractor shall coordinate all his work and scheduling with the Contracting Officer's Representative (COR). The contractor shall notify the COR a minimum of forty eight (48) hours in advance of commencing work.

4.12.2 Coordinate all activities with facility personnel in order to minimize interruption to normal activities.

4.13 The Contractor shall be responsible for all damage to premises and structures caused by the Contractor during remediation. Damage shall be repaired to the original condition at the Contractor's expense using original criteria.

4.14 POWER OUTAGES AND SHUTDOWNS:

4.14.1 Either the existing or new heating system shall be operational during the heating season from approximately 1 November to 1 April, except for short-term schedule shutdowns approved by the Contracting Office. Any request for a short term shutdown shall be submitted seven (7) days in advance. The request shall give the approximate length of time required for the proposed work and the methods to be used.

4.14.2 During shutdowns of heating systems it shall be the contractor's responsibility to provide auxiliary heat and freeze protection as required.

4.14.3 Any request for a short term power outage shall be submitted seven (7) days in advance. The request shall given the approximate length of time required for the proposed work and the methods to be used.

6 SUBMITTALS AND SAMPLES

6.1 Four (4) copies of all submittals shall be provided for materials indicated on the drawings or specified herein. The Contractor shall mail four copies to the address listed below and two copies to an address to be determined at the construction prework meeting.

Four copies: ACA, DOC
Construction/Engineer Division
Building 2176, 13 ½ Street
Ft Campbell KY 42223-5358

6.1.2 If the contractor chooses items or equipment other than ones referenced on the drawings, he shall submit illustrations, schedules, performance charts, instructions, brochures, diagrams and other information of his "equal" and the ones referenced. These materials shall be used for comparison purposes in determining the acceptability of the "equal" unit. The Contracting Officer reserves the right to request samples of "or equal" items when the information submitted for comparison is inadequate in determining acceptability. The contractor is required to obtain approval for all items, regardless of whether identical to the ones referenced in the contract documents or a substituted "equal".

6.2 The contractor shall submit an individual certification from the manufacturer that each and every material component used in this project is 100% asbestos-free.

7 QUALITY CONTROL PLAN:

7.1 **General:** The Government will consider an interim plan for the first 10 days of operation. However, the contractor shall furnish for approval by the Government, not later than 10 days after receipt of Notice to Proceed, Contractor Quality Control (CQC) Plan with which he proposes to implement the requirements of Contract Clause entitled INSPECTION OF CONSTRUCTION. The plan shall identify personnel, procedures, instructions, records, and forms to be used. If the contractor fails to submit an acceptable QC plan within the time herein prescribed, the Contracting Officer (CO) may refuse to allow construction to start if an acceptable interim plan is not furnished.

7.2 **Coordination Meeting:** Before start of construction, the contractor shall meet with the CO and discuss the contractor's quality control system. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing administration of the system for both on-site and off-site work and the inter-relationship of contractor's inspection and control with the Government's inspection. A record of the meeting shall be prepared and signed by both the contractor and the CO. The record shall become a part of the contract file. There may also be occasions when subsequent conferences will be called to reconfirm mutual understandings.

7.3 **The Quality Control Plan shall include as a minimum, the following:**

7.3.1 A description of the quality control organization, including chart showing lines of authority and acknowledge that the CQC staff shall conduct the phase inspections for all aspects of the work specified and shall report to the project manager or someone higher in the contractor's organization.

7.3.2 The name, qualifications, duties, responsibilities and authorities each person assigned a QC function.

7.3.3 A copy of the letter to the QC manager signed by an authorized official of the firm, which describes the responsibilities and delegates the authorities of the QC manager shall be furnished.

7.3.4 Procedures for scheduling and managing submittals, including those of subcontractors, offset fabricators, suppliers and purchasing agents.

7.3.5 Control testing procedures for each specific test. (Laboratory facilities will be approved by the Contracting Officer.)

7.3.6 Reporting procedures including proposed reporting formats.

7.4 **Acceptance of Plan:** Acceptance of the contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the contractor to make changes in his CQC plan and operations as necessary to obtain the quality specified.

7.5 **Notification of Changes:** After acceptance of the QC plan, the contractor shall notify the CO in writing of any proposed change. Proposed changes are subject to acceptance by CO.

7.6 **Quality Control Organization:**

7.6.1 **CQO System Manager:** The contractor shall identify an individual within his organization at the site of the work, who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the contractor.

7.6.2 **Personnel:** A staff shall be maintained under the direction of the system manager to perform all QC activities. The actual strength of the staff during any specific work period may vary to cover work phase needs, shifts, and rates of placement. The personnel of this staff shall be fully qualified by experience and technical training to perform their assigned responsibilities and shall be directly hired by and work for the contractor.

7.6.3 **Submittals:** Submittals shall be as specified in the SPECIAL PROVISIONS entitled REQUIRED MATERIAL SUBMITTALS. The CQC Organization shall be responsible for certifying that submittals are in compliance with the contract requirements.

7.6.4 **Control:** Contractor Quality Control is the means by the contractor assures himself that his construction complies with the requirements of the contract plans and specifications. The controls shall be adequate to cover all construction operations, including both on-site and off-site fabrication, and will be keyed to the proposed construction sequence. The controls shall include at least three phases of inspection of all definitive features of work as follows:

7.6.4.1 **Preparatory Inspection:** This shall be performed prior to beginning any work on any definable feature of work. It shall include a review of contract requirements; a check to assure that all materials and/or equipment have been tested, submitted and approved; a check to assure that provisions have been made to provide required control testing examination of the work area to ascertain that all preliminary work has been completed; and a physical examination of materials, equipment, and sample work to assure that they conform to approved shop drawings or submittal data and that all materials and/or equipment are on hand. The Contracting

Officer Representative (COR) shall be notified at least 72 hours in advance of the preparatory inspection and such inspection shall be made a matter of record in the Contractor's Quality Control documentation as required below. Subsequent to the preparatory inspection and prior to commencement of work, the contractor shall instruct each applicable worker as to the acceptance level of workmanship required in his CQC plan in order to meet contract specifications.

7.6.4.2 **Initial Inspections:** This shall be performed as soon as a representative portion of the particular feature of work has been accomplished and shall include examination of the quality of workmanship and a review of control testing for compliance with contract requirements, use of defective or damaged materials, omissions, and dimensional requirements. The Contracting Officer's Representative shall be notified at least 24 hours in advance of the initial inspection and such inspection shall be made a matter of record in the CQC documentation as required below.

7.6.4.3 **Follow-up Inspections:** These shall be performed daily to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. Such inspections shall be made a matter of record in the CQC documentation as required below. Final follow up inspections shall be conducted and test deficiencies corrected prior to the addition of new features of work.

7.7 **Tests:**

7.7.1 **Testing Procedure:** The contractor shall perform tests specified or required to verify that control measures are adequate to provide a product which conforms to contract requirements. The contractor shall procure the services of an industry recognized testing laboratory or he may establish an approved testing laboratory at the project site. A list of tests which the contractor understands he is to perform shall be furnished as a part of the CQC plan to the Contracting Officer. The list shall give the test name, specification paragraph containing the test requirements, and the personnel and laboratory responsible for each type of test. The contractor shall perform the following activities and record and provide the following data:

7.7.1.1 Verify that testing procedures comply with contract requirements.

7.7.1.2 Verify that facilities and testing equipment are available and comply with testing standards.

7.7.1.3 Check test instrument calibration data against certified standards.

7.7.1.4 Verify that recording forms, including all of the test documentation requirements, have been prepared.

7.8 **Completion Inspection:** At the completion of all work or any increment thereof established by a completion time stated in the paragraph entitled COMMENCEMENT, PROSECUTION & COMPLETION OF WORK or stated elsewhere in the specifications, the CQC System Manager shall conduct a completion inspection of the work and develop a punch list of items which do not conform to the approved plans and specifications. Such a list shall be included in the CQC documentation and shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or his staff shall make a second completion inspection to ascertain that all deficiencies have been corrected and so notify the Contracting Officer's Representative. The completion inspection and any deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

7.9 **Documentation:**

7.9.1 The contractor shall maintain current records of quality control operations, activities, and tests performed including the work of suppliers and subcontractors. These records shall be on an acceptable form and indicate a description of trades working on the project, the numbers of personnel working, the weather conditions encountered, any delays encountered, and acknowledgment of deficiencies noted along with the corrective actions

taken on current and previous deficiencies. A typical contractor quality control report form is at the end of this section. In addition, these records shall include factual evidence that required activities or tests have been performed, including but not limited to the following:

7.9.1.1 Type and number of control activities and test involved.

7.9.1.2 Results of control activities or tests.

7.9.1.3 Nature of defects, causes or rejection and similar actions.

7.9.1.4 Proposed remedial action.

7.9.1.5 Corrective actions taken.

7.9.2 These records shall cover both conforming and defective or deficient features and shall include a statement that supplies and materials incorporated in the work comply with the contract. Legible copies of these records shall be furnished to the CO daily.

7.9.3 **Notification of Noncompliance:** The Contracting Officer will notify the contractor of any noncompliance with the foregoing requirements. The contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the contractor or his representative at the site of the work, shall be deemed sufficient for the purpose of notification. If the contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop work orders shall be made the subject of claim for extension of time or for excess costs or damages by the contractor.

TYPICAL CONTRACTOR QUALITY CONTROL REPORT

CONTRACTOR'S NAME (ADDRESS)

DAILY CONSTRUCTION QUALITY CONTROL REPORT

DATE:_____REPORT NO._____

Contract No.:_____

Description & Location of Work:_____

Weather (Clear) (P. Cloudy) (Cloudy): Temperature:___Min:___Max: Rainfall_____Inch

Contractor/Subcontractors & Area of Responsibility:_____
a._____
b._____
c._____
d._____
e._____
f._____
g._____

1. Work Performed Today: (Indicate location and description of work performed. Refer to work performed by prime and/or subcontractors by letter in table above.)
_____
_____
_____
_____

2. Results of Surveillance: (Include satisfactory work completed, or deficiencies with action to be taken. It is necessary to indicate the level of inspection; preparatory, initial, or follow-up for each item of work covered herein. In addition a signed narrative description of each preparatory inspection must be attached to this report.)
_____
_____
_____
_____

3. Tests Required by Plans and/or Specifications Performed & Results of Tests:
_____
_____
_____
_____
_____

4. Verbal Instructions Received: (List any instructions given by Government personnel on construction deficiencies, retesting required, etc., with action to be taken
_____
_____
_____
_____

5. Remarks: (Cover any conflicts in Plans, Specifications, or Instructions.)

INSPECTOR

CONTRACTOR'S VERIFICATION: The above report is complete and correct and all material and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications except as noted above.

CONTRACTOR'S APPROVED AUTHORIZED REPRESENTATIVE

Construction Site Final Stabilization Specifications

1.1 **Soil Preparation**: Prepare the soil by mowing, tilling, scarifying, smoothing, and/or a combination of these to ensure the best possible ground condition to promote the acceptance of seed, sod, or turf mats. Loosen sub-grade areas to a minimum depth of 3 inches in bare and compacted areas and a minimum depth of 2 inches in existing grass areas. The contractor shall remove stones over 1 inch in any dimension as well as sticks, roots, rubbish, and other matter. The contractor shall hand rake and blend into adjacent areas and flush with concrete curbs, walks, etc. The contractor shall aerate, fill low spots, remove bumps, and generally grade to provide drainage of surface water.

1.2 **Plant Selection**

1.2.1 Refer to Table 1.1, 1.2, and 1.3 for grass mixtures.

1.2.2 English Rye Grass Seed is the only approved Rye Grass seed that can be used.

1.3 **Stabilization in Steep Sloped Conditions**: Areas which have slopes of 3:1 or greater will have either sod installed or erosion control matting will be used.

1.3.1 **Sod:** On slopes greater than 3: 1 sod should be anchored with pins or other approved methods. Installed sod should be rolled or tamped to provide good contact between sod and soil. Irrigate sod and the top 4" of soil immediately after installation. Sod should not be cut or placed in extremely wet or dry weather. Irrigation shall be used to supplement rainfall for a minimum of 2 -3 weeks.

1.3.2 **Erosion Control Blanket/Matting**: Matting and blankets can be applied to steep slopes where erosion hazards are high and conventional seeding is likely to be too slow in providing adequate protective cover. Concentrated flow areas, and all slopes steeper than 2 ½ :1, with a height of ten feet or greater, and cuts and fills within stream buffers, should be stabilized with the appropriate erosion control matting or blanket. Maintenance of the final cover must be considered when choosing blankets versus matting. As a minimum a single weave straw mesh geo-textile material should be used based on slope and storm water flow rate. Staples should be used to anchor permanent matting. Follow manufacturer's recommendations for stapling or staking pattern and frequency.

1.4 **Seeding**: Installing seed method shall be Broadcast seeding or hydro-seeding. Seeding procedure shall ensure even coverage. Seeding mixtures and application rates vary depending if the site is within the main cantonment area or in the rear training area. Seeding mixture and application rates can be found in the following tables:

Main Cantonment Area
Permanent Cover Seeding Mixtures & Application Rates

Seeding Dates	Grass Seed	%	Application Rate	Fertilizer
February 1 to July 1	Kentucky 31 Fescue	80%	16 lbs/acre	Fertilizer Based on Soil Test Results Or 15-15-15 Fertilizer applied at a rate suggested by the manufacturer for the specified seed type
	Korean Lespedeza	15%	5 lbs/acre	
	English Rye	5%	1 lb/acre	
June 1 to August 15	Kentucky 31 Fescue	55%	11 lbs/acre	
	English Rye	20%	2 lbs/acre	
	Korean Lespedeza	15%	5 lbs/acre	
	German Millet	10%	4 lbs/acre	

April 15 to August 15	Bermuda Grass (hulled)	70%	28 lbs/acre
	Annual Lespedeza	30%	9 lbs/acre
August 1 to December 1	Kentucky 31 Fescue	70%	14 lbs/acre
	English Rye	20%	2 lbs/acre
	White Clover	10%	1 lb/acre
February 1 to December 1	Kentucky 31 Fescue	70%	14 lbs/acre
	Crown Vetch	25%	4 lbs/acre
	English Rye	5%	1 lb/acre

Table 1.1

1.4.1 **Rear Training Area Seeding Requirements**:

1.4.1.1 Non-native perennial grasses and plants on the noxious weed list will not be used. Fescue will be used only on road shoulders where a non-wildlife friendly species is desirable to reduce the risk of vehicle/wildlife collisions.

1.4.1.2 Areas less than 10 acres and larger areas not heavily disturbed should be re-vegetated using annual plants to hold the soil and allow the area to re-vegetate naturally. The advantages of these plants include quick germination, non-persistence, wildlife benefits and good soil holding capabilities. The preferred seed mixtures for less than 10 acres can be found in Table 1.2.

1.4.1.3 Large areas, greater than 10 acres or areas that require special attention will be seeded with native grasses. Native grass species found on Fort Campbell are little bluestem, Indian grass, big bluestem, Eastern gamma grass and switch grass. The native grass seed must be certified as originating from plants native to the Big Barrens region of Kentucky, Tennessee, Missouri or Arkansas. Seed collected from a Ft Campbell genotype is preferred. The use of any other seed must be approved by Directorate of Public Works, Environmental Division, Conservation Branch. Establishing native grasses can be difficult, contact the fisheries and wildlife program biologists for technical assistance at 798-9855. Native grass mixtures can be found in Table 1.3.

Rear Training Area < 10 Acres of Disturbance
Permanent Cover Seeding Mixtures & Application Rates

September-March	Oats	60 lbs/acre	Fertilizer: per soil test or 300 lbs/acre of 15-15-15 fert.
	Wheat	60 lbs/acre	
	Annual Rye	60 lbs/acre	
	Mix with a legume below:		
	Reseeding Cowpeas	20 lbs/acre	Fertilizer in the mix
	Red Clover	10 lbs/acre	Fertilizer in the mix
	Buckwheat	25 lbs/acre	Fertilizer in the mix
	Button Clover	10 lbs/acre	Fertilizer in the mix
	Crimson Clover	10 lbs/acre	Fertilizer in the mix
April - August	Choose a Millet or Milo:		
	Pearl Millet	10 lbs/acre	Fertilizer: per soil test or 300 lbs/acre of 15-15-15 fertilizer
	German Foxtail Millet	20 lbs/acre	
	Browntop Millet	25 lbs/acre	
	Japanese Millet	20 lbs/acre	
	Proso Millet	20 lbs/acre	
	Milo (grain Sorghum)	15 lbs/acre	
	Mix with a legume below:		

	Reseeding Cowpeas	20 lbs/acre	Fertilizer in the mix
	Red Clover	10 lbs/acre	Fertilizer in the mix
	Buckwheat	25 lbs/acre	Fertilizer in the mix
	Button Clover	10 lbs/acre	Fertilizer in the mix
	Crimson Clover	10 lbs/acre	Fertilizer in the mix

Table 1.2

Rear Training Area > 10 Acres of Disturbance
Permanent Cover Seeding Mixtures & Application Rates

Little Bluestem	5-7 lbs pure live seed (pls)/acre	NO FERTILIZER REQUIRED
Big Bluestem	5-7 lbs pure live seed (pls)/acre	
Indian Grass	7 lbs pure live seed (pls)/acre	
Easter gamagrass	7 lbs pure live seed (pls)/acre	
Switchgrass	5-7 lbs pure live seed (pls)/acre	

Table 1.3

1.4.2 Watering shall be started immediately after completing the seeding of an area. Water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 1 inch depth. Runoff and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed. Watering of other adjacent areas or plant material shall be prevented.

1.5 **Mulch**: Mulch is required for all permanent vegetation applications. Mulch that is applied to seeded areas shall achieve 75% soil cover. Select the mulching material from the following and apply as indicated:

1.5.1 When using permanent erosion control blankets or block sod, mulch is not required.

1.5.2 Dry straw or hay of good quality shall be used which is free of weed seeds. Dry straw will be applied at the rate of 2 tons per acre. Dry hay will be applied at a rate of 2.5 tons per acre.

1.5.3 Straw or hay mulch will be spread uniformly immediately after seeding and/or planting. The mulch may be spread by blower type spreading equipment, other spreading equipment or by hand.

1.5.4 Wood cellulose mulch or wood pulp fiber shall be used with hydraulic seeding. It shall be installed at the rate of 500 pounds per acre. Dry straw or hay shall be applied after hydraulic seeding.

1.5.5 One thousand pounds per acre of wood cellulose or wood pulp fiber, which includes a tackifier to adhere the seed mixture, shall be used with hydraulic seeding on slopes ¾: 1 or greater

1.6 **Rock**

1.6.1 Riprap rock will be used on slopes and areas where conditions may not allow vegetation to grow.

1.6.2 Riprap applications for channel or slope stabilization should be designed by a professional familiar with the design of storm water conveyance structures.

1.6.3 Riprap is usually solid durable limestone rock, which is generally resistant to erosion and to normal stream chemistry. Riprap material that is of questionable origin should be given a sodium sulfate soundness test to determine its durability.

1.6.4 Different classes of machines riprap are shown in Table 2, other classes of riprap are shown in Table 3.

Machine Riprap Specifications

Class A-1	Class A-3	Class B	Class C
2" to 15" diameter (0.5 to 169 lbs) dumped	2" to 6" diameter (0.5 to 11 lbs) dumped	3" to 27" diameter (1.5 to 985 lbs) dumped	5" to 36" diameter (6 to 2335 lbs) dumped
20% by weight shall be at least 4" size (3 lbs) Typical thickness is 18" with surface tolerance of 3"	20% by weight shall be at least 4" size (3 lbs) Typical thickness is 12" with surface tolerance of 2"	20% by weight shall be at least 6" size (11 lbs) Typical thickness is 30" with surface tolerance of 4"	20% by weight shall be at least 9" size (36 lbs) Typical thickness is 42" with surface tolerance of 6"

Table 2

Non-Machined Riprap Specifications

Rubble-Stone (Plain)	Rubble-Stone (Grouted)	Concrete Blocks	Sacked Riprap (Sand Cement)
Min 2" diameter (min 0.5 lbs) Placed by hand	Min 2" diameter (min 0.5 lbs) Placed by hand	Rectangular shapes Placed by hand	Approx 1 CUFT (approx 100lbs) Placed by hand
80% of weight shall be at least 10" in any dimension (prefer rectangular) Remainder if 2" to 4" size for chinking	80% of weight shall be at least 10" in any dimension (prefer rectangular) Remainder if 2" to 4" size for chinking	Class A Concrete with 3000 psi 28-day strength Various thickness from 4" upwards	Sacks should be cotton or jute cloth that retains sand and dry cement mix. Mix 1 bag cement (94 lbs) with 5 CUFT of sand
Typical thickness is 12" with surface tolerance of 2"	Typical thickness is 12" with surface tolerance of 2"	Design and install per manufacturers recommendations	Typical thickness is 10" with surface tolerance of 2"

Table 3

1.7 Rock Check Dams

1.7.1 Rock check dams are constructed from large aggregate (clean of fines) such as TDOT #1 or #2 with stone sizes from 2 to 15 inches. These structures are used from drainage areas up to 5 acres. An upstream layer of smaller aggregate may be used for filtering. Rock can be placed by hand or by mechanical methods to achieve complete ditch or swale coverage.

1.7.2 Rock check dams should be keyed into the swale or channel bottom at, typically, a depth of 6 inches. Advantages of keying into the swale or channel bottom are that the check dam will be more stable and less likely to wash out.

1.7.3 Sediment should be removed before it reaches a depth of one half the original dam height. Maintenance needs identified in inspections or by other means should be accomplished before the next storm event if possible but in no case more than seven days after the need is identified.

1.7.4 If the area is to be mowed, check dams should be removed once final stabilization has occurred. Otherwise, check dams may remain in place permanently. After removal, the disturbed area should be seeded and mulched immediately.

1.8 Permanent Stabilizing Drainage Ditches

1.8.1 After construction work is complete all drainage ditches shall be permanently covered and stabilized with vegetation or other engineering controls such a rock.

1.8.2 Drainage Ditches with gently sloping bottoms (less than 3%) shall be stabilized with grass seeding or erosion control blankets. Moderately sloping ditches (3%-6% slopes) require turf reinforcement matting and may include rock for soils are that are silty. Steeply sloping ditches (greater than 10%) will require heavier armoring with concrete, riprap, gabion baskets, retaining walls or other engineered controls or products.

1.8.3 Drainage ditches may require temporary silt check dams to capture sediment and reduce ditch bottom down-cutting to allow permanent vegetation to stabilize. Silt dikes or dams shall be made of rock, stone-filled bags, fiber rolls or brush.

1.8.4 Silt fencing and straw bales are not approved for permanent use as silt check dams for drainage ditches that carry flowing water. Do not place silt checks in creeks or streams. Sediment must be intercepted before it reaches streams, lakes, rivers, or wetlands.

1.8.5 Stabilize ditches and install silt controls before excavating, filling, or grading uphill areas. Inspect, repair, and clean out sediment from upstream side of silt controls after each rainfall of ½ inch or more. Remove temporary silt controls after site is stabilized when 95% vegetation has been achieved and approved by government contracting agency. Filter fabric will be placed under all rock ditch check dams during installation to prevent rock from sinking for easy removal.

SECTION 16370
ELECTRICAL DISTRIBUTION SYSTEM, AERIAL
PART 1 GENERAL

1.1 **REFERENCES**: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C2	(2003) National Electrical Safety Code
ANSI C29.2	(1992) Insulators - Wet-Process Porcelain and Toughened Glass - Suspension Type
ANSI C29.3	(1986) Wet Process Porcelain Insulators - Spool Type
ANSI C29.4	(1989) Wet-Process Porcelain Insulators - Strain Type
ANSI C29.5	(1984; R 1991) Wet-Process Porcelain Insulators - Low- and Medium-Voltage Types
ANSI C29.6	(1984) Wet-Process Porcelain Insulators - High-Voltage Pin Type
ANSI C29.7	(1983; C29.7a) Wet-Process Insulators – High-Voltage Porcelain Line-Post Type
ANSI C29.8	(1985) Wet-Process Porcelain Insulators - Apparatus, Cap and Pin Type

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 123	(1989a) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153	(1982; R 1987) Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 475	(1989) Zinc-Coated Steel Wire Strand
ASTM B 1	(1990) Hard-Drawn Copper Wire
ASTM B 8	(1993) Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B 232	(1992) Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Reinforced (ACSR)

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)

IEEE C57.12.00	(1993) IEEE Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
IEEE C62.1	(1989; R 1994) Surge Arresters for ac Power Circuits

IEEE C62.2	(1987; R 1994) Guide for the Application of Gapped Silicon-Carbide Surge Arresters for Alternating Current Systems
IEEE C62.11	(1993) IEEE Standard Metal-Oxide Surge Arresters for AC Power Circuits
IEEE Std 81	(1983) Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System (Part 1)
IEEE Std 100	(1992) IEEE Standard Dictionary of Electrical and Electronics Terms

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA HV 2	(1984; R 1991)&\ Application Guide for Ceramic Suspension Insulators
NEMA LA 1	(1992) Surge Arresters
NEMA SG 2	(1993) High Voltage Fuses
NEMA WC 7	(1993) Cross-Linked-Thermosetting-Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2003) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

UL 467	(1993) Grounding and Bonding Equipment
UL 486A	(1991; Rev Oct 1991) Wire Connectors and Soldering Lugs for Use with Copper Conductors
UL 486B	(1991; Rev thru Apr 1992) Wire Connectors for Use with Aluminum Conductors

1.2 **GENERAL REQUIREMENTS**

1.2.1 **Terminology:** Terminology used in this specification is as defined in IEEE Std 100.

1.2.2 Reserved.

1.3 **SUBMITTALS**: The following shall be submitted in accordance with Special provision:

1.3.1 **Manufacturer's Catalog**: Catalog cuts, brochures, circulars, specifications, product data, and printed information in sufficient detail and scope to verify compliance with the requirements of the contract documents.

1.3.2 **Material, Equipment, and Fixture Lists**: A complete itemized listing of equipment and materials proposed for incorporation into the work. Each entry shall include the item number, the quantity of items proposed, and the name of the manufacturer of the item.

1.3.3 **Installation Procedures**: As a minimum, installation procedures for Transformers. Procedures shall include diagrams, instructions, and precautions required to install, adjust, calibrate, and test the devices and equipment.

1.3.4 **Electrical Distribution System**: Detail drawings consisting of equipment drawings, illustrations, schedules, instructions, diagrams and other information necessary to define the installation and enable the Government to check conformity with the requirements of the contract drawings. Detail drawings shall as a minimum include:

a. Transformers.
b. Pole top switches.
c. Conductors.
d. Insulators.
e. Surge arresters

If departures from the contract drawings are deemed necessary by the contractor, complete details of such departures shall be submitted with the detail drawings. Approved departures shall be made at no additional cost to the Government. Detail drawings shall consist of the following:

a. Detail drawings showing physical arrangement, construction details, connections, finishes, materials used in fabrication, provisions for conduit or bus-way entrance, access requirements for installation and maintenance, physical size, electrical characteristics, foundation and support details, and equipment weight. Drawings shall be drawn to scale and/or dimensioned. Optional items shall be clearly identified as included or excluded.

b. Internal wiring diagrams of equipment showing wiring as actually provided for this project. External wiring connections shall be clearly identified

1.3.5 **As-Built Drawings**: The as-built drawings shall be a record of the construction as installed. The drawings shall include the information shown on the contract drawings as well as deviations, modifications, and changes from the contract drawings, however minor. The as-built drawings shall be kept at the job site and updated daily. The as-built drawings shall be a full sized set of prints marked to reflect deviations, modifications, and changes. The as-built drawings shall be complete and show the location, dimensions, part identification, and other information. Upon completion of the work, the Contractor shall submit three full sized sets of the marked prints to the Contracting Officer for approval. If upon review, the as-built drawings are found to contain errors and/or omissions, they will be returned to the Contractor for correction. The Contractor shall correct and return the as-built drawings to the Contracting Officer for approval within ten calendar days from the time the drawings are returned to the Contractor.

1.3.6 **Reports**:

1.3.6.1 **Factory Test**: Certified factory test reports shall be submitted when the manufacturer performs routine factory tests, including tests required by standards listed in paragraph REFERENCES. Results of factory tests performed shall be certified by the manufacturer, or an approved testing laboratory, and submitted within 7 days following successful completion of the tests specified in applicable publications or in these specifications.

1.3.6.2 **Field Testing** : A proposed field test plan 30 days prior to testing the installed system. No field test shall be performed until the test plan is approved. The test plan shall consist of complete field test procedures including tests to be performed, test equipment required, and tolerance limits.

1.3.6.3 **Test Reports**: [Six] copies of the information described below in 8-1/2 by 11 inch binders having a minimum of 5 rings, and including a separate section for each test. Sections shall be separated by heavy plastic dividers with tabs.

a. A list of equipment used, with calibration certifications.
b. A copy of measurements taken.
c. The dates of testing.
d. The equipment and values to be verified.
e. The condition specified for the test.
f. The test results, signed and dated.
g. A description of adjustments made.

1.3.6.4 **Certificates: Materials and Equipment**: Where materials or equipment are specified to conform to the standards of the Underwriters Laboratories (UL) or to be constructed or tested, or both, in accordance with the standards of the American National Standards Institute (ANSI), the Institute of Electrical and Electronic Engineers (IEEE), or the National Electrical Manufacturers Association (NEMA), the Contractor shall submit proof that the items provided under this section of the specifications conform to such requirements. The label of, or listing by, UL will be acceptable as evidence that the items conform thereto. Either a certification or a published catalog specification data statement, to the effect that the item is in accordance with the referenced ANSI or IEEE standard, will be acceptable as evidence that the item conforms thereto. A similar certification or published catalog specification data statement to the effect that the item is in accordance with the referenced NEMA standard, by a company listed as a member company of NEMA, will be acceptable as evidence that the item conforms thereto. In lieu of such certification or published data, the Contractor may submit a certificate from a recognized testing agency equipped and competent to perform such requirements services, stating that the items have been tested and that they conform to the listed, including methods of testing of the specified agencies.

1.3.6.5 **Operation and Maintenance Manuals: Electrical Distribution System**: Six copies of Operation and Maintenance manuals, within 7 calendar days following the completion of tests and including assembly, installation, operation and maintenance instructions, spare parts data which provides supplier name, current cost, catalog order number, and a recommended list of spare parts to be stocked. Manuals shall also include data outlining detailed procedures for system startup and operation, and a troubleshooting guide which lists possible operational problems and corrective action to be taken. A brief description of all equipment, basic operating features, and routine maintenance requirements shall also be included. Documents shall be bound in a binder marked or identified on the spine and front cover. A table of contents page shall be included and marked with pertinent contract information and contents of the manual. Tabs shall be provided to separate different types of documents, such as catalog ordering information, drawings, instructions, and spare-parts data. Index sheets shall be provided for each section of the manual when warranted by the quantity of documents included under separate tabs or dividers. Three additional copies of the instructions manual within 30 calendar days following the approval of the manuals.

1.4 **DELIVERY, STORAGE, AND HANDLING**: Devices and equipment shall be visually inspected by the Contractor when received and prior to acceptance from conveyance. Stored items shall be protected from the environment in accordance with the manufacturer's published instructions. Damaged items shall be replaced. Oil filled transformers and switches shall be stored in accordance with the manufacturer's requirements. Wood poles held in storage for more than 2 weeks shall be stored in accordance with ANSI O5.1. Handling of wood poles shall be in accordance with ANSI O5.1, except that pointed tools capable of producing indentations more than inch in depth shall not be used.

1.5 **EXTRA MATERIALS**: One additional spare fuse or fuse element for each furnished fuse or fuse element shall be delivered to the contracting officer when the electrical system is accepted. Two complete sets of all special tools required for maintenance shall be provided, complete with a suitable tool box. Special tools are those that only the manufacturer provides, for special purposes(to access compartments, or operate, adjust, or maintain special parts).

PART 2 PRODUCTS

2.1 **GENERAL REQUIREMENTS**: Products shall conform to the following requirements. Items of the same classification shall be identical including equipment, assemblies, parts, and components.

2.2 **STANDARD PRODUCT**: Material and equipment shall be the standard product of a manufacturer regularly engaged in the manufacture of the product and shall essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening.

2.3 **NAMEPLATES**

2.3.1 **General**: Each major component shall have the manufacturer's name, address, type or style, model or serial number, and catalog number on a nameplate securely attached to the equipment. Nameplates shall be made of non-corrosive metal. As a minimum, nameplates shall be provided for transformers, meters and switches, etc.

2.3.2 **Liquid-Filled Transformer Nameplates**: Nameplates shall indicate percent impedance, voltage, kVA, frequency, number of phases, cooling class, insulation class, temperature rise, the number of gallons and composition of transformer liquid dielectric, and shall be permanently marked with a statement that the transformer dielectric is non-polychlorinated biphenyl. If transformer nameplate is not so marked, the Contractor shall furnish manufacturer's certification for each transformer that the dielectric is non-PCB classified. Liquid Dielectrics Certifications shall be related to serial numbers on transformer nameplates.

2.4 **CORROSION PROTECTION**

2.4.1 **Aluminum Materials**: Aluminum shall not be used in contact with earth or concrete. Where aluminum conductors are connected to dissimilar metal, fittings conforming to UL 486B shall be used.

2.4.2 **Ferrous Metal Materials**

2.4.2.1 **Hardware**: Ferrous metal hardware shall be hot-dip galvanized in accordance with ASTM A 153 and ASTM A 123.

2.4.2.2 Reserved.

2.4.3 **Finishing**: Painting required for surfaces not otherwise specified and finish painting of items only primed at the factory shall be as specified.

2.5 **CONDUCTORS, CONNECTORS, AND SPLICES**

2.5.1 **Aluminum-Composition Conductors**: Aluminum-conductor-steel-reinforced, ACSR, shall comply with ASTM B232.

2.5.2 **Copper Conductors**: Hard-drawn-copper conductors shall comply with ASTM B 1 and ASTM B 8 as appropriate for the conductor size.

2.5.3 **Connectors and Splices**: Connectors and splices shall be of copper alloys for copper conductors, aluminum alloys for aluminum-composition conductors, and a type designed to minimize galvanic corrosion for copper to aluminum-composition conductors. Aluminum-composition and aluminum-composition to copper shall comply with UL 486B, and copper-to-copper shall comply with UL 486A.

2.6 **MEDIUM-VOLTAGE LINES**

2.6.1 **Bare Medium-Voltage Lines**: Bare medium-voltage line conductors shall be aluminum-conductor-steel-reinforced, ACSR; Conductor types shall not be mixed on any project, unless specifically indicated. Conductors larger than No. 2 AWG shall be stranded.

2.6.2 Reserved.

2.7 **LOW-VOLTAGE LINES**: Low-voltage line conductors shall be of the neutral-supported secondary and service drop type with cross-linked thermosetting polyethylene (XLP) insulation in accordance with NEMA WC 7. Neutral-supported secondary and service drop conductors shall be insulated copper with bare hard-drawn-copper or copper-clad steel neutrals. or ACSR neutrals. Conductors on secondary racks may be provided in lieu of neutral-supported cable for pole line circuits where necessary clearances are available.

2.8 **POLES AND HARDWARE**

2.8.1 – 2.8.3 Reserved.

2.8.4 **Pole Line Hardware**: Hardware shall be hot-dip galvanized in accordance with ASTM A 153. Pole-line hardware shall be hot-dip galvanized steel. Washers shall be installed under bolt heads and nuts on wood surfaces and elsewhere as required. Washers used on through-bolts and double-arming bolts shall be approximately 2-1/4 inches square and 3/16 inch thick. The diameter of holes in washers shall be the correct standard size for the bolt on which a washer is used. Washers for use under heads of carriage-bolts shall be of the proper size to fit over square shanks of bolts. Eye bolts, bolt eyes, eye nut, strain-load plates, lag screws, guy clamps, fasteners, hooks, shims, and clevises shall be used wherever required to support and to protect poles, brackets, cross arm, guy wires, and insulators.

2.8.5 Reserved.

2.8.6 **Guy Assemblies**: Guy assemblies shall be zinc-coated steel in accordance with ASTM A 475. Guy assemblies, including insulators and attachments, shall provide a strength exceeding the required guy strength. Three-eye thimbles shall be provided on anchor rods to permit attachment of individual primary, secondary, and communication down guys. Anchors shall provide adequate strength to support all loads. Guy strand shall be 7 strand. Guy material shall be Class A zinc-coated-steel with a minimum breaking strength [not 6000 pounds, except where two or more guys are used to provide the required strength. Guy rods shall be not less than 8 feet in length by 3/4 in diameter.

2.9 **INSULATORS**: Insulators shall comply with NEMA HV 2 for general requirements. Suspension insulators shall be used at corners, angles, dead-ends, other areas where line insulators do not provide adequate strength, and as indicated. Mechanical strength of suspension insulators and hardware shall exceed the rated breaking strength of the attached conductors.

2.9.1 **Medium-Voltage Line Insulators**: Medium-voltage line insulators shall comply with ANSI C29.2, ANSI C29.5,ANSI C29.6, and ANSI C29.7 as applicable. Ratings shall not be lower than the ANSI classes indicated in TABLE I. Where line-post insulators are used for angles greater than 15 degrees, clamp-top fittings shall be provided as well as for other locations shown. Conductor clamps for use with clamp-top, line-post insulators shall be hot-dip galvanized malleable iron for copper conductors and aluminum alloy for aluminum-composition conductors. Either line-post or pin insulators may be used for cross arm construction. Pin insulators for use on voltages in excess of 6 kV phase-to-phase shall be radio-interference-freed or else line-post insulators shall be used.

TABLE I - MINIMUM ANSI RATING OF MEDIUM-VOLTAGE INSULATORS BY CLASS

Voltage Level	Line-Post		Pin	Suspension
Up to 5 kV	57-1 or 11		55-3	One 52-1
	57-1 or 11	55-5		Two 52-1
6 kV to 15 kV	57-1 or 11	55-5		Two 52-2
	57-2 or 12	56-3		Two 52-3 or 4

2.9.2 **Low-Voltage Line Insulators**: Low-voltage line insulators shall comply with ANSI C29.2 and ANSI C29.3 as applicable. Spool insulators for use on low-voltage lines shall be mounted on clevis attachments or secondary racks and shall be not smaller than Class [53-2] . For No. 4/0 AWG and larger conductors, Class 53-4 shall be used. Suspension insulators on clevis attachments used at dead-ends shall be not smaller than Class 52-1.

2.9.3 **Strain Insulators for Guy Wires**: Strain insulators for use in insulated guy assemblies shall comply with ANSI C29.4 for porcelain or equivalent fiberglass, and shall have a mechanical strength exceeding the rated breaking strength of the attached guy wire. Insulators shall be not smaller than Class [54-1] for lines up to 5 kV.

2.9.4 – 2.12 Reserved.

2.13 **FUSES AND SWITCHES, MEDIUM-VOLTAGE**

2.13.1 Fused Cutouts Medium-voltage fuses and cutouts shall comply with NEMA SG 2 and shall be of the Load break type construction rated 15 kV and of the normal. Open-link cut-outs are not acceptable. Fuses shall be either indicating or dropout type. Fuse ratings shall be as indicated. Fuse cutouts shall be equipped with mounting brackets suitable for the indicated installations.

2.14 Reserved.

2.15 **TRANSFORMERS**: Transformers shall comply with IEEE C57.12.00 for general requirements and ANSI C57.12.20 for specific requirements for overhead transformers. Overhead distribution transformers shall be of the outdoor type, mineral-oil-insulated single-phase or three-phase as indicated and have two separate windings per phase. Transformers shall be provided with necessary auxiliary mounting devices suitable for the indicated installation. Transformers shall have four 2-1/2 percent rated kVA high-voltage taps above and below rated primary voltage. Transformer installations shall include one primary fuse cutout and one surge arrester for each ungrounded phase conductor. Self-protected transformers are not acceptable. Transformer tanks shall have a standard gray finish.

2.16 **SURGE ARRESTERS**: Surge arresters shall comply with NEMA LA 1 and IEEE C62.1, IEEE C62.2, and IEEE C62.11, and shall be provided for protection of aerial-to-underground transitions, transformers and other indicated equipment. Arresters shall be distribution class, rated as shown. Arresters for use at elevations in excess of 6000 feet above mean sea level shall be specifically rated for that purpose. Arresters shall be equipped with mounting brackets suitable for the indicated installations. Arresters shall be of the metal-oxide type suitable for outdoor installations.

2.17 Reserved.

2.18 **GROUNDING AND BONDING**

2.18.1 **Driven Ground Rods**: Ground rods shall be of copper-clad steel conforming to UL 467 not less than ¾ inch in diameter by 8 feet) in length of the sectional type driven full length into the earth.

2.18.2 **Grounding Conductors**: Grounding conductors shall be bare, except where installed in conduit with associated phase conductors. Insulated conductors shall be of the same material as the phase conductors and green color-coded, except that conductors shall be rated no more than 600 volts. Bare conductors shall be ASTM B 8 soft-drawn unless otherwise indicated. Aluminum is not acceptable.

2.19 – 2.21 Reserved.

2.22 **FACTORY TESTS**: Factory tests shall be performed, as follows, in accordance with the applicable publications and with other requirements of these specifications. The Contracting Officer shall be notified at least 10 days before the equipment is ready for testing.

a. Transformers: Manufacturer's standard routine design and other tests in accordance with IEEE C57.12.00.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS: Equipment and devices shall be installed and energized in accordance with the manufacturer's published instructions. Secondary circuits installed in conduit on poles shall conform to the requirements of Section 16415 ELECTRICAL WORK, INTERIOR.

3.1.1 **Conformance to Codes**: The installation shall comply with the requirements and recommendations of NFPA 70 and ANSI C2. No reduction in clearance shall be made.

3.1.2 **Verification of Dimensions**: The Contractor shall become familiar with details of the work, shall verify dimensions in the field, and shall notify the Contracting Officer of any discrepancy before performing any work.

3.2 & 3.3 Reserved.

3.4 **GUY INSTALLATION**: Guys shall be provided where shown, with loads and strengths as indicated, and wherever conductor tensions are not balanced, such as at angles, corners, and dead-ends. Where a single guy will not provide the required strength, two or more guys shall be provided. Where guys are wrapped around poles, at least two guy hooks shall be provided and pole shims shall be provided where guy tension exceeds 6000 pounds. Guy clamps 6 inches in length with three 5/8 inch bolts, or offset-type guy clamps, or approved guy grips shall be provided at each guy terminal. Guy-strain insulators shall be provided in each guy for wood poles. Multiple-helix screw anchors shall be provided in marshy ground; rock anchors shall be installed in rock at right angles to guys, elsewhere anchors shall be of an expanding type, except that power installed screw anchors of equivalent holding power are acceptable. A half-round yellow polyvinyl, fiberglass, or other suitable plastic guy marker, not less than 8 feet in length, shall be provided at the anchor end of each guy shown, securely clamped to the guy or anchor at the bottom and top of the marker. Holding capacities for down guys shall be based on a lead angle of 45 degrees.

3.5 CONDUCTOR INSTALLATION

3.5.1 **Line Conductors**: Unless otherwise indicated, conductors shall be installed in accordance with manufacturer's approved tables of sags and tensions. Proper care shall be taken in handling and stringing conductors to avoid abrasions, sharp bends, cuts, kinks, or any possibility of damage to insulation or conductors. Conductors shall be paid out with the free end of conductors fixed and cable reels portable, except where terrain or obstructions make this method unfeasible. Bend radius for any insulated conductor shall not be less than the applicable NEMA specification recommendation. Conductors shall not be drawn over rough or rocky ground, nor around sharp bends. When installed by machine power, conductors shall be drawn from a mounted reel through stringing sheaves in straight lines clear of obstructions. Initial sag and tension shall be checked by the Contractor, in accordance with the manufacturer's approved sag and tension charts, within an elapsed time after installation as recommended by the manufacturer.

3.5.2 **Connectors and Splices**: Connectors and splices shall be mechanically and electrically secure under tension and shall be of the nonbolted compression type. The tensile strength of any splice shall be not less than the rated breaking strength of the conductor. Splice materials, sleeves, fittings, and connectors shall be noncorrosive and shall not adversely affect conductors. Aluminum-composition conductors shall be wire brushed and an oxide inhibiter applied before making a compression connection. Connectors which are factory-filled with an inhibiter are acceptable. Inhibiters and compression tools shall be of types recommended by the connector

manufacturer. Primary line apparatus taps shall be by means of hot line clamps attached to compression type bail clamps (stirrups). Low-voltage connectors for copper conductors shall be of the solderless pressure type. Noninsulated connectors shall be smoothly taped to provide a waterproof insulation equivalent to the original insulation, when installed on insulated conductors.

3.5.3 **Conductor-To-Insulator Attachments**: Conductors shall be attached to insulators by means of clamps, shoes or tie wires, in accordance with the type of insulator. For insulators requiring conductor tie-wire attachments, tie-wire sizes shall be as indicated in TABLE II.

TABLE II - TIE-WIRE REQUIREMENTS

CONDUCTOR Copper (AWG)	TIE WIRE Soft-Drawn Copper (AWG)
6	8
4 and 2	6
1 through 3/0	4
4/0 and larger	2
ACSR (AWG	AAC (AWG
Any size	6 or 4

3.5.4 Reserved.

3.5.5 **Medium-Voltage Insulated Cables**: Medium-voltage cable messengers shall be attached to poles with clamps providing a strength exceeding the required messenger strength and with no less than 5/8 inch through-bolts. Messengers shall be dead-ended, grounded, and line-guyed at corners and dead-ends, and at intervals not exceeding 1000 feet along straight runs.

3.5.6 **Low-Voltage Insulated Cables**: Low-voltage cables shall be supported on clevis fittings using spool insulators. Dead-end clevis fittings and suspension insulators shall be provided where required for adequate strength. Dead-end construction shall provide a strength exceeding the rated breaking strength of the neutral messenger. Clevis attachments shall be provided with not less than 5/8 inch through-bolts. Secondary racks may be used when installed on wood poles and where the span length does not exceed 200 feet. Secondary racks shall be two-, three-, or four-wire, complete with spool insulators. Racks shall meet strength and deflection requirements for heavy-duty steel racks, and shall be either galvanized steel or aluminum alloy. Tops of insulator saddles shall be rounded and smooth to avoid damage to conductor insulation. Each insulator shall be held in place with a 5/8 inch button-head bolt equipped with a nonferrous cotter pin, or equivalent, at the bottom. Racks for dead-ending four No. 4/0 AWG or four larger conductors shall be attached to poles with three 5/8 inch through-bolts. Other secondary racks shall be attached to poles with at least two 5/8 inch through-bolts. Minimum vertical spacing between conductors shall not be less than 8 nches.

3.6 **TRANSFORMER INSTALLATION**: Transformers shall be carefully installed so as not to scratch finishes or damage bushings. Transformers shall be installed in accordance with the manufacturer's instructions. After installation, surfaces shall be inspected and scratches shall be touched up with a finish provided by the transformer manufacturer for this purpose.

3.7 **CONNECTIONS TO UTILITY LINES**: The Contractor shall coordinate the work with the Contracting Officer and shall provide for final connections to the utility electric lines.

3.8 Reserved.

3.9 **CONNECTIONS TO BUILDINGS**

3.9.1 **Aerial Services**: Connections to buildings shall be made at approximately the point indicated and shall be connected to the service entrance conductors. Supports at buildings shall be adequate to withstand required pulls; supports shall not be rated less than 1000 pounds. Drip loops shall be formed on conductors at entrances to buildings, cabinets, or conduits. Service-entrance conduits with termination fittings and conductors within the building, including sufficient slack for connection to aerial service cables, shall conform to the requirements of Section 16415 ELECTRICAL WORK, INTERIOR.

3.9.2 Reserved.

3.10 **GROUNDING**: Noncurrent-carrying metal parts of equipment and conductor assemblies, operating mechanisms of pole top switches, panel enclosures, transformers, and other noncurrent-carrying metal items shall be grounded. Additional grounding of equipment, neutral, and surge arrester grounding systems shall be installed at poles where indicated.

3.10.1 **Grounding Electrodes**: Grounding electrodes shall be installed as follows:

a. **Driven rod electrodes** - Unless otherwise indicated, ground rods shall be located approximately 3 feet out from base of the pole and shall be driven into the earth until the tops of the rods are approximately 1 foot below finished grade. Multiple rods shall be evenly spaced at least 10 feet apart and connected together 2 feet below grade with a minimum No. 6 bare copper conductor.

b. **Ground Resistance** - The maximum resistance of a driven ground rod shall not exceed 25 ohms under normally dry conditions. Whenever the required ground resistance is not met, provide additional electrodes to achieve the specified ground resistance. In high ground resistance, UL listed chemically charged ground rods may be used. If the resultant resistance exceeds 25 ohms measured not less than 48 hours after rainfall, the Contracting Officer shall be notifies immediately. Connections below grade shall be fusion welded. Connections above grade shall be fusion welded or shall use UL 467 approved connectors.

3.10.2 **Grounding and Bonding Connections**: Connections above grade shall be made by the fusion-welding process or with bolted solder less connectors in compliance with UL 467, and those below grade shall be made by a fusion-welding process. Where grounding conductors are connected to aluminum-composition conductors, specially treated or lined copper-to-aluminum connectors suitable for this purpose shall be used

3.10.3 **Grounding Electrode Conductors**: On multi-grounded circuits, as defined in ANSI C2, provide a single continuous vertical grounding electrode conductor. Neutrals, surge arresters, and equipment grounding conductors shall be bonded to this conductor. For single grounded or ungrounded systems, provide a grounding conductor for the surge arrester and equipment grounding conductors and a separate grounding conductor for the secondary neutrals. Grounding electrode conductors shall be sized as shown. Secondary system neutral conductors shall be connected directly to the transformer neutral bushings, then connected with a neutral bonding jumper between the transformer neutral bushing and the vertical grounding electrode conductor, as shown. Grounding electrode conductors shall be stapled to wood poles at intervals not exceeding 2 feet.

3.11 FIELD TESTING

3.11.1 **General:** Field testing shall be performed in the presence of the Contracting Officer. The Contractor shall notify the Contracting Officer 7 days prior to conducting tests. The Contractor shall furnish materials, labor, and equipment necessary to conduct field tests. The Contractor shall perform tests and inspections recommended by the manufacturer unless specifically waived by the Contracting Officer. The Contractor shall maintain a written record of tests which includes date, test performed, personnel involved, devices tested, serial number and name of test equipment, and test results. Field reports will be signed and dated by the Contractor.

3.11.2 **Safety:** The Contractor shall provide and use safety devices such as rubber gloves, protective barriers, and danger signs to protect and warn personnel in the test vicinity. The Contractor shall replace any devices or equipment which are damaged due to improper test procedures or handling.

3.11.3 **Ground-Resistance Tests**: The resistance of each grounding electrode system shall be measured using the fall-of-potential method defined in IEEE Std 81. Ground resistance measurements shall be made before the electrical distribution system is energized and shall be made in normally dry conditions not less than 48 hours after the last rainfall. Resistance measurements of separate grounding electrode systems shall be made before the systems are bonded together below grade. The combined resistance of separate systems may be used to meet the required resistance, but the specified number of electrodes shall be provided.

3.11.4 Reserved.

3.11.5 **Sag and Tension Test**: The Contracting Officer shall be given prior notice of the time schedule for stringing conductors or cables serving overhead medium-voltage circuits and reserves the right to witness the procedures used for ascertaining that initial stringing sags and tensions are in compliance with requirements for the applicable loading district and cable weight.

3.11.6 **Low-Voltage Cable Test**: For service laterals from overhead lines, the low-voltage cable, complete with splices, shall be tested for insulation resistance after the cables are installed, in their final configuration, ready for connection to the equipment, and prior to energization. The test voltage shall be 500 volts dc, applied for one minute between each conductor and ground and between all possible combinations of conductors with other conductors in the same conduit. The minimum value of insulation shall be:

$$R \text{ in megohms} = \frac{(\text{rated voltage in kV} + 1) \times 1000}{\text{(length of cable feet)}}$$

Each cable failing this test shall be repaired or replaced. The repaired cable shall then be retested until failures have been eliminated.

3.11.7 **Liquid-Filled Transformer Tests**: The following field tests shall be performed on liquid-filled transformers.Pass-fail criteria shall be in accordance with the transformer manufacturer's specifications.

a. Insulation resistance test phase-to-ground.

b. Turns ratio test.

c. Correct phase sequence.

3.11.8 Reserved.

3.11.9 **Operating Tests**: After the installation is completed, and at such time as the Contracting Officer may direct,the Contractor shall conduct operating tests for approval. The equipment shall be demonstrated to operate in accordance with the specified requirements. An operating test report shall be submitted in accordance with paragraph SUBMITTALS.

3.12 Reserved.

3.13 **ACCEPTANCE**: Final acceptance of the facility will not be given until the Contractor has successfully completed all tests and after all defects in installation, material or operation have been corrected.

End of Section

SECTION 16415
ELECTRICAL WORK, INTERIOR
PART 1 GENERAL

1.1 **REFERENCES**:: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C39.1	(1981; R 1992) Electrical Analog Indicating Instruments
ANSI C82.1	(1985; C82.1a; C82.1b; C82.1c; R 1992) Ballasts for Fluorescent Lamps Specifications
ANSI C82.4	(1992) Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 709	(1992) Laminated Thermosetting Materials

CODE OF FEDERAL REGULATIONS (CFR)

47 CFR 18	Rules and Regulations: Industrial, Scientific, and Medical Equipment
47 CFR 68	Connection of Terminal Equipment to the Telephone Network

FEDERAL SPECIFICATIONS (FS)

FS L-C-530	(Rev C) Coating, Pipe, Thermoplastic Resin

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C62.41	(1991) Surge Voltages in Low-Voltage AC Power Circuits

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

ICEA S-80-576	(1988) Communications Wire and Cable for Wiring of Premises

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250	(1991) Enclosures for Electrical Equipment (1000 Volts Maximum)
NEMA AB 1	(1993) Molded Case Circuit Breakers and Molded Case Switches
NEMA BU 1	(1994) Busways
NEMA FU 1	(1986) Low Voltage Cartridge Fuses

NEMA ICS 6	(1993) Enclosures for Industrial Control and Systems
NEMA LE 4	(1987) Recessed Luminaires, Ceiling Compatibility
NEMA OS 1	(1989) Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports
NEMA PB 1	(1990) Panelboards
NEMA RN 1	(1989) Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit
NEMA TC 2	(1990) Electrical Polyvinyl Chloride (PVC) Tubing (EPT) and Conduit (EPC-40 and EPC-80)
NEMA WD 1	(1983; R 1989) General Requirements for Wiring Devices
NEMA WD 6	(1988) Wiring Devices – Dimensional Requirements

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(1999) National Electrical Code
NFPA 101	(1999) Safety to Life from Fire in Buildings and Structures

RURAL ELECTRIFICATION ADMINISTRATION (REA)

REA TE&CM 823	(1980) Electrical Protection by Use of Gas Tube Arresters

UNDERWRITERS LABORATORIES (UL)

UL 6	(1993) Rigid Metal Conduit
UL 20	(1995) General-Use Snap Switches
UL 44	(1991; Rev thru Jan 1995) Rubber-Insulated Wires and Cables
UL 50	(1992; Rev thru Nov 1994) Enclosures for Electrical Equipment
UL 67	(1993; Rev thru Dec 1993) Panelboard
UL 83	(1991; Rev thru Oct 1994) Thermoplastic-Insulated Wires and Cables
UL 94	(1991; Rev thru Apr 1995) Tests for Flammability of Plastic Materials for Parts in Devices
UL 98	(1994; R Feb 1995) Enclosed and Dead-Front Switches
UL 198D	(1995) Class K Fuses

UL 198E	(1988; Rev Jul 1988) Class R Fuses
UL 467	(1993) Grounding and Bonding Equipment
UL 486A	(1991; Rev Oct 1991) Wire Connectors and Soldering Lugs for with Copper Conductors
UL 486B	1991; Rev thru Apr 1992) Wire Connectors for Use with Aluminum Conductors
UL 486C	(1991; Rev thru Sep 1992) Splicing Wire Connectors
UL 489	(1991; Rev thru Jun 1999) Molded-Case Circuit Breakers and Breaker Enclosure
UL 497	(1999) Protectors for Paired Conductors Communication Circuits.
UL 498	(1991; Rev thru Oct 1994) Attachment Plugs and Receptacles
UL 510	(1994) Insulating Tape
UL 512	(1999) Fuse-holders
UL 514A	1991; Rev Apr 1999) Metallic Outlet Boxes
UL 514B	(1992; Rev thru Apr 1999) Fittings for Conduit and Outlet Boxes
UL 542	(1999) Lamp-holders, Starters, and Starter Holders for Fluorescent Lamps
UL 817	(1994; Rev thru Aug 1999) Cord Sets and Power-Supply Cords
UL 857	(1999) Busways and Associated Fittings
UL 869A	(1993; Rev Apr 1994) Reference Standard for Service Equipment
UL 924	(1995) Emergency Lighting and Power Equipment
UL 943	(1993; Rev thru Jan 1995) Ground-Fault Circuit Interrupters
UL 1029	(1994; Rev Oct 1994) High-Intensity-Discharge Lamp Ballasts
UL 1570	(1988; Rev thru Mar 1995) Fluorescent Lighting Fixtures
UL 1571	(1991; Rev thru Mar 1995) Incandescent Lighting Fixtures High
UL 1572	(1991; Rev thru Mar 1995) Intensity Discharge Lighting Fixtures

1.2 **GENERAL**

1.2.1 **Rules**: The installation shall conform to the requirements of NFPA 70 and NFPA 101, unless more stringent requirements are indicated herein or shown.

1.2.2 **Coordination**: The drawings indicate the extent and the general location and arrangement of equipment, conduit, and wiring. The Contractor shall become familiar with all details of the work and verify all dimensions in the field so that the outlets and equipment shall be properly located and readily accessible. Outlets, and other equipment and materials shall be located to avoid interference with mechanical or structural features. Raceways, junction and outlet boxes, and lighting fixtures shall not be supported from sheet metal roof decks. If any conflicts occur necessitating departures from the drawings, details of and reasons for departures shall be submitted and approved prior to implementing any change.

1.2.3 **Special Environments**.

1.2.3.1 **Weatherproof Locations**: Wiring, Fixtures, and equipment in designated locations shall conform to NFPA 70 requirements for installation in damp or wet locations.

1.2.4 **Standard Products**: Material and equipment shall be a standard product of a manufacturer regularly engaged in the manufacture of the product and shall essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening.

1.2.5 **Identification Nameplates**: Major items of electrical equipment and major components shall be permanently marked with an identification name to identify the equipment by type or function and specific unit number as indicated. Unless otherwise specified, all identification nameplates shall be made of laminated plastic in accordance with ASTM D 709 with black outer layers and a white core. Edges shall be chamfered. Plates shall be fastened with black-finished round- head drive screws.

1.2.6 **As Built Drawings**: Following the project completion or turnover, within 30 days the Contractor shall furnish two sets of as built drawings to the Contracting Officer.

1.3 **SUBMITTALS**: The following shall be submitted in accordance with the special provision:

1.3.1 **Drawings- Electrical Work**: Detail drawings for all materials and equipment specified. Detail drawings shall consist of a complete list of equipment and materials, including manufacturer's descriptive and technical data; catalog cuts;and any special installation instructions that may be required. Drawings shall show applicable schematic diagrams and conduit and cable tray runs, anchorage, and showing actual layout, including locations, type any gauge of cables, and terminal assignment of wiring, after Installation.

1.3.2 **Reports - Materials and Equipment**: The label or listing of the Underwriters Laboratories, Inc., shall be accepted as evidence that the materials or equipment conform to the applicable standards of that agency. In lieu of this label or listing, a statement from a nationally recognized, adequately equipped testing agency indicating that the items have been tested in accordance with required procedures and that the materials and equipment comply with all contract requirements will be accepted For other than equipment and materials specified to conform to UL publications, a manufacturer's statement indicating complete compliance with the applicable Federal Specification, or standard of the American Society for Testing and Materials, National Electrical Manufacturers Association, or other commercial standard, is acceptable.

1.3.3 Reserved.

1.4 **WORKMANSHIP**: Materials and equipment shall be installed in accordance with recommendations of the manufacturer and as shown.

PART 2 PRODUCTS

2.1 **MATERIALS AND EQUIPMENT**: Materials and equipment shall conform to the respective publications and other requirements specified below. Materials and equipment not listed below shall be as specified elsewhere in this section.

2.1.1 **Bus-ways**: UL 857. Busses shall be copper. Enclosures shall be steel. Short-circuit ratings, except as indicated, shall be in accordance with NEMA BU1.

2.1.1.1 & 2.1.1.2 Reserved.

2.1.2 **Cables and Wires**: Conductors in cables shall be annealed copper. Design is based on copper conductors. Cables shall be single-conductor type, unless otherwise indicated. Cables and wires shall conform to UL 44 for rubber-insulated type; UL 83 for the thermoplastic-insulated type; and UL 719 for the nonmetallic-sheathed cables.

2.1.2.1 Thru 2.1.2.2 Reserved.

2.1.2.3 **Service Entrance Cable**: Type SE.

2.1.2.4 **Grounding Cables**: Grounding cables shall be bare or shall have green low-voltage insulation.

2.1.2.5 **Cord Sets and Power-Supply Cords**: UL 817.

2.1.3 Reserved.

2.1.4 **Cabinets for Communications**: UL 50. Cabinets shall have boxes constructed of zinc-coated sheet steel. Cabinets shall be constructed with interior dimensions not less than those indicated. Trim shall be fitted with hinged door and flush catch. Doors shall provide maximum-size openings to the box interiors. Boxes shall be provided with a 5/8 inch plywood back board having a two-coat insulating varnish finish.

2.1.5 **Connector Blocks**: Connector blocks shall be type 66 equipped with punch down clips.

2.1.6 **Telephone Backboards**: Backboards shall be 5/8 inch plywood having a two-coat insulating varnish finish.

2.1.7 **Protector Modules**: The protector modules shall be of the three-electrode gas tube type. Protection modules shall be maximum duty as specified in REA TE&CM 823. The gas modules shall be fail-short and shall shunt high voltage to ground in less than 10 nanoseconds, shall have an external spark gap, and shall comply with UL 497.

2.1.8 Reserved.

2.1.9 **Circuit Breakers**: Interrupting capacities of molded-case circuit breakers will normally be in accordance with UL 489.Circuit breakers shall have voltage, current and interrupting ratings as indicated. Fully rated circuit breakers shall be provided to obtain the specified interrupting rating.

2.1.9.1 **Molded-Case Circuit Breakers**: NEMA AB 1 and UL 489. Single-pole breakers shall be full module size; two poles shall not be installed in a single module. Multi-pole breakers shall be of the common-trip type having a single operating handle, but for sizes of 100 amperes or less may consist of single-pole breakers permanently factory assembled into a multi-pole unit having an internal, mechanical, non-temperable common-trip mechanism and external handle ties. Breakers coordinated with current-limiting fuses shall have a combined

interrupting capacity of 100,000 symmetrical amperes. All poles of associated breakers shall open if any fuse blows.

2.1.9.2 Reserved.

2.1.9.3 **Ground Fault Circuit Interrupters**: UL 943. Breakers equipped with ground fault interrupters shall have ground fault class, interrupting capacity, and voltage and current ratings as indicated.

2.1.10 **Conduit and Tubing**

2.1.10.1 **Electrical, Zinc-Coated Steel Metallic Tubing (EMT):** UL 797

2.1.10.2 thru 2.1.10.7 Reserved.

2.1.10.8 **Rigid Metal Conduit**: UL 6.

2.1.10.9 Reserved.

2.1.10.10 **Surface Metal Electrical Raceways and Fittings:** UL 5.

2.1.11 **Conduit and Device Boxes and Fittings**

2.1.11.1 **Boxes, Metallic Outlet**: NEMA OS 1 and UL 514A.

2.1.11.2 & 2.1.11.3 Reserved.

2.1.11.4 **Boxes, Switch (Enclosed), Surface-Mounted**: UL 98.

2.1.11.5 **Fittings for Conduit and Outlet Boxes**: UL 514B.

2.1.11.6 & 2.1.11.7 Reserved.

2.1.12 **Conduit Coatings Plastic Resin System**: FS L-C-530 or NEMA RN 1, Type A-40.

2.1.13 **Connectors, Wire Pressure**

2.1.13.1 **Copper Conductors**: UL 486A.

2.1.13.2 **Aluminum Conductors**: UL 486B.

2.1.14 **Electrical Grounding and Bonding Equipment**: UL 467.

2.1.14.1 **Ground Rods**: Ground rods shall be of copper-clad steel conforming to UL 467 not less than ¾" inch diameter by 8 feet in length of sectional type driven full length into the earth.

2.1.14.2 **Ground Bus**: The ground bus shall be bare conductor or flat copper in one peace.

2.1.15 **Enclosures**: NEMA ICS 6 or NEMA 250

2.1.15.1 **Cabinets and Boxes:** UL 50, hot-dip, zinc-coated, if sheet steel

2.1.15.2 **Circuit Breaker:** UL 489.

2.1.16 **Fixtures, Lighting and Fixture Accessories/Components** : Standard Drawing 40-06-04 sheets referenced hereinafter and enclosed as an integral part of these specifications, additional fixtures shown on contract drawings, if any. Fixtures, accessories and components, including ballasts, lamp holders, lamps, starters and starter holders, shall conform to industry standards specified below.

2.1.16.1 **Fixture, Auxiliary or Emergency:** UL 924.

2.1.16.2 **Incandescent Fixture**: NEMA LE 4 for ceiling compatibility of recessed fixtures and UL1571.

2.1.16.3 **Fluorescent**

a. **Fixture**: NEMA LE 4 for ceiling compatibility of recessed fixtures and UL 1570. Fixtures shall be plainly marked for proper lamp and ballast type to identify lamp diameter, wattage, color and start type. Marking shall be readily visible to service personnel, but not visible from normal viewing angles.

b. **Ballast**: Electronic Ballast shall consist of a rectifier, high frequency inverter, and power control and regulation circuitry. The ballast shall be UL listed, Class P, with a Class A sound rating and shall contain no PCBs. Ballast shall meet 47 CFR 18 for electromagnetic interference and shall not interfere with the operation of other electrical equipment. Design shall withstand line transients per IEEE C62.41, Category A. Unless otherwise indicated, the minimum number of ballast shall be used to serve each individual fixture, using one lamp ballast. A single ballast may be used to serve multiple fixtures if they are continuous mounted, factory manufactured for that installation with an integral wire-way and are identically controlled.

(a) Light output regulation shall be +/- 10%.

(b) Voltage input regulation shall be +/- 10%.

(c) Lamp current crest factor shall be no more than 1.7.

(d) Ballast factor shall be not less than 85% nor more than 100%, unless otherwise indicated

(e) A 60 Hz filter shall be provided. Flicker shall be no more than 15% with any lamp suitable for the ballast.

(f) Ballast case temperature shall not exceed 25 degree celsius rise above 40 degree celsius ambient,when tested in accordance with UL 935.

(g) Input current third harmonic shall not exceed 32 percent total harmonic distortion or27.5 percent of the third triplens.

(h) Power factor shall not be less than 0.9.

(i) Ballast shall operate at a frequency of 20 KHz or more.

(j) Operating filament voltage shall be 2.5 to 4.5 volts.

(k) Warranty. Three year full warranty including a $10 labor allowance.

(l) Ballast Efficacy Factor (BEF) shall be in accordance with the following table. Ballast and lamps shall be matching rapid start or instant start as indicated on the following table. If 32W-F32-T8 lamps and ballast are used, they must be either all rapid start or all instant start.

ELECTRONIC FLUORESCENT BALLAST EFFICACY FACTORS

LAMP TYPE	TYPE OF STARTER& LAMP	NOMINAL OPERATION INPUT VOLTAGE	NUMBER OF LAMPS	MIN BALLAST EFFICACY FACTOR
32W F32 T8	Rapid or instant start	120 or 277 volts	1	2.4
			2	1.4
			3	1.0
			4	0.8

*For ballast specifically designed for use with dimming controls. The BEF is calculated using the formula: BEF = Ballast Factor (in percent) / Power Input, where Power Input = Total Wattage of combined lamps & ballast.

c. **Lamp-holders, Starters, and Starter Holders**: UL 542.

2.1.16.4 **High-Intensity-Discharge**

a. **Fixture**: NEMA LE 4 for ceiling compatibility of recessed fixtures and UL 1572.

b**. Ballast**: ANSI C82.4 for multiple supply types and UL1029.

2.1.17 **Fuses and Fuse-holders**

2.1.17.1 **Fuses, Low Voltage Cartridge Type**: NEMA FU 1.

2.1.17.2 Reserved.

2.1.17.3 **Fuses, Class K, High-Interrupting-Capacity Type**: UL 198D.

2.1.17.4 Reserved.

2.1.17.5 **Fuses, Class R**: UL 198E

2.1.17.6 thru 2.1.17.8 Reserved.

2.1.17.9 **Fuse-holders**: UL 512.

2.1.18 Instruments, Electrical Indicating ANSI C39.1.

2.1.19 & 2.1.20 Reserved.

2.1.21 Panel-boards Dead-front construction, NEMA PB 1 and UL 67.

2.1.22 **Receptacles**

2.1.22.1 & 2.1.22.2 Reserved.

2.1.22.3 **Standard Grade**: UL498

2.1.22.4 Ground Fault Interrupters UL 943, Class A or B.

2.1.22.5 Reserved.

2.1.23 Service Equipment UL 869A.

2.1.24 Splice, Conductor: UL 486C.

2.1.25 Thru 2.1.27 Reserved.

2.1.28 **Tapes**

2.1.28.1 Plastic Tape UL 510.

2.1.28.2 Rubber Tape UL 510.

2.1.29 thru 2.1.31 Reserved.

2.1.32 Wiring Devices NEMA WD 1 for general-purpose wiring devices, and NEMA WD 6 for dimensional requirements of wiring devices.

2.1.33 Telephone Jacks: 47 CFR 68, plastic shall be VO in accordance with UL 94.

PART 3 EXECUTION

3.1 **GROUNDING**: Grounding shall be in conformance with NFPA 70, the contract drawings, and the following specifications.

3.1.1 **Ground Rods**: The resistance to ground shall be measured using the fall-of-potential method described in IEEE Std 81. The maximum resistance of a driven ground shall not exceed 25 ohms under normally dry conditions. If this resistance cannot be obtained with a single rod, additional rods not less than 6 feet on centers, or if sectional type rods are used, additional sections may be coupled and driven with the first rod. In high-ground-resistance, UL listed chemically charged ground rods may be used. If the resultant resistance exceeds 25 ohms measured not less than 48 hours after rainfall, the Contracting Officer shall be notified immediately. Connections below grade shall be fusion welded. Connections above grade shall be fusion welded or shall use UL 467 approved connectors.

3.1.2 **Ground Bus**: Ground bus shall be provided in the electrical equipment rooms as indicated. Non-current-carrying metal parts of electrical equipment shall be effectively grounded by bonding to the bus. The ground bus shall be bonded to both the entrance ground, and to a ground rod or rods as specified above having the upper ends terminating approximately 4 inches above the floor. Connections and splices shall be of the welded, bolted, or pressure-connector type, except that pressure connectors or bolted connections shall be used brazed, for connections to removable equipment. Connections shall be bolted type in lieu of thermo-weld, so they can be changed as required by additions and/or alterations.

3.1.3 **Grounding Conductors**: A green ground wire shall be furnished regardless of the type of conduit. All equipment grounding conductors, including metallic raceway systems used as such, shall be bonded or joined together in each wiring box or equipment enclosure. Metallic raceways and grounding conductors shall be checked to assure that they are wired or bonded into a common junction. Metallic boxes and enclosures, if used, shall also be bonded to these grounding conductors by an approved means per NFPA 70. When boxes for receptacles, switches, or other utilization devices are installed, any designated grounding terminal on these devices shall also be bonded to the equipment grounding conductor junction with a short jumper.

3.2 **WIRING METHODS**

3.2.1 **General Requirements**: Unless otherwise indicated, wiring shall consist of insulated conductors installed in rigid zinc-coated steel conduit.

3.2.2 **Conduit and Tubing Systems**: Conduit sizes shown are based on use of copper conductors with insulation types as described in paragraph WIRING METHODS. Minimum size of raceways shall be 1/2 inch. Nonmetallic conduit and tubing may be used in damp, wet or corrosive locations when permitted by NFPA70 and the conduit or tubing system is provided with appropriate boxes, covers, clamps, screws or other appropriate type of fittings. Bushings, manufactured fittings or boxes providing equivalent means of protection shall be installed on the ends of all conduits and shall be of the insulating type, where required by NFPA 70. Penetrations of above grade floor slabs, time-rated partitions and fire walls shall be Fire stopped. Raceways crossing structural expansion joints shall be provided with suitable expansion fittings or other suitable means to compensate for the building expansion and contraction and to provide for continuity of grounding.

3.2.2.1 **Below Slab-on-Grade or in the Ground**: Electrical wiring below slab-on-grade shall be protected by a conduit system. Conduit passing vertically through slabs-on-grade shall be rigid steel. Rigid steel conduits installed below slab-on -grade or in the earth shall be field wrapped with 0.010 inch thick pipe-wrapping plastic tape applied with a 50 percent overlay, or shall have a factory-applied polyvinyl chloride, plastic resin, or epoxy coating system.

3.2.2.2 **Installing in Slabs Including Slabs on Grade**: Conduits shall be installed as close to the middle of. concrete slabs as practicable without disturbing the reinforcement. Outside diameter shall not exceed 1/3 of the slab thickness and conduits shall be spaced not closer than 3 diameters on centers except at cabinet locations where the slab thickness shall be increased as approved by the Contracting Officer

3.2.2.3 **Exposed Raceways**: Exposed raceways shall be installed parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceilings. Raceways under raised floors and above accessible ceilings shall be considered as exposed installations in accordance with NFPA 70 definitions.

3.2.2.4 **Changes in Direction of Runs**: Changes in direction of runs shall be made with symmetrical bends or cast-metal fittings. Field-made bends and offsets shall be made with an approved hickey or conduit-bending machine. Crushed or deformed raceways shall not be installed. Trapped raceways in damp and wet locations shall be avoided where possible. Care shall be taken to prevent the lodgment of plaster, dirt, or trash in raceways, boxes, fittings and equipment during the course of construction. Clogged raceways shall be entirely freed of obstructions or shall be replaced.

3.2.2.5 **Supports**: Metallic conduits and tubing shall be securely and rigidly fastened in place at intervals of not more than 10 feet and within3 feet of boxes, cabinets, and fittings, with approved pipe straps, wall brackets, conduit clamps, conduit hangers, threaded C-clamps, or ceiling trapeze. C-clamps or beam clamps shall have strap or rod-type retainers. Loads and supports shall be coordinated with supporting structure to prevent damage or deformation to the structures, but no load shall be applied to joist bridging. Fastenings shall be by wood screws or screw-type nails to wood; by toggle bolts on hollow masonry units; by expansion bolts on concrete or brick; by machine screws, welded threaded studs, heat-treated or spring-steel-tension clamps on steel work. Nail-type nylon anchors or threaded studs driven in by a powder charge and provided with lock washers and nuts may be used in lieu of expansion bolts or machine screws. Raceways or pipe straps shall not be welded to steel structures. Holes cut to a depth of more than 1-1/2 inches in reinforced concrete beams or to a depth of more than 3/4 inch in concrete joists shall avoid cutting the main reinforcing bars. Holes not used shall be filled. In partitions of light steel construction, sheet-metal screws may be used. Conduit shall not be supported using wire or nylon ties. Raceways shall be installed as a complete system and be independently supported from the structure. Upper raceways shall not be the support of lower raceways. Supporting means will not be shared between electrical raceways and mechanical piping or ducts and shall not be fastened to hung ceiling supports. Conduits shall be fastened to all sheet-metal boxes and cabinets with two locknuts where required by the NFPA70, where insulating bushings are used, and where bushings cannot be brought into firm contact with the box; otherwise, a single locknut and bushing may be used. A pull wire shall be inserted in each empty raceway in which wiring is to be installed by others if the raceway is more than 50 feet in length and contains more than the equivalent of two 90-degree bends, or where the raceway is more than 150 feet in length. The pull wire shall be of No. 14 AWG zinc-coated steel, or of plastic having not less than 200 pound per square inch tensile strength. Not.less than 10 inches of slack shall be left at each end of the pull wire

3.2.2.6 **Exposed Risers**: Exposed risers in wire shafts of multistory buildings shall be supported by U-clamp hangers at each floor level, and at intervals not to exceed 10 feet.

3.2.2.7 **Exposed Lengths of Conduit, Over 600 Volts**: Exposed lengths of conduit containing power conductors operating at more than 600 volts shall have two red bands 2 inches wide spaced 8 inches apart painted near each coupling; the intervening space between the red bands shall be painted white, and on the white space the voltage shall be stenciled in Black.

3.2.3 thru 3.2.6 Reserved

3.2.7 **Cables and Conductors**

3.2.7.1 **Sizes:** All sizes are based on copper conductors. Sizes shall be not less than indicated. Branch- circuit conductors shall be not smaller than No. 12 AWG. Conductors for branch circuits of 120 volts more than100 feet long from panel to load center, shall be no smaller than No. 10 AWG. Class 1 remote control and signal circuit conductors shall be not less than No. 14 AWG. Class 2 remote control and signal circuit conductors shall be not less than No. 16 AWG.

The conductor sizes are based on the use of TW insulation for conductors smaller than No. 1/0 AWG and THW insulation for conductors No. 1/0 and larger, except where otherwise indicated. Higher temperature rated conductors will be permitted to be used, if the UL tested temperature ratings for which the equipment in the circuit is marked are not exceeded. Conductor sizes for nonlinear loads shall be based on the use of minimum 75 degrees C insulated conductors for branch circuits and Feeders

3.2.7.2 **Power Conductor Identification**: Phase conductors shall be identified by color coding. The color of the insulation on phases A, B, and C respectively(for three phase) or phases A and B respectively (for single phase) of different voltage systems shall be as follows:

120/208 volt, 3-phase: Black, red, and blue.
120/240 volt, single/phase: Black and red.

Conductor phase and voltage identification shall be made by color-coded insulation for all conductors smaller than No. 6 AWG. For conductors No. 6 AWG and larger, identification shall be made by color-coded insulation, or conductors with black insulation may be furnished and identified by the use of half-lapped bands of colored electrical tape wrapped around the insulation for a minimum of 3 inches of length near the end, or other method as submitted by the Contractor and approved by the Contracting Officer. Conductor identification shall be provided within each enclosure where a tap, splice, or termination is made. Phase identification by a particular color shall be maintained continuously for the length of a circuit, including junctions.

3.2.7.3 **Control Conductor Identification**: Control circuit conductor identification shall be made by color-coded insulated conductors, plastic-coated self-sticking printed markers, permanently attached stamped metal foil markers, or equivalent means as approved. Control circuit terminals of equipment shall be properly identified. Terminal and conductor identification shall match that shown on approved detail drawings. Hand lettering or marking is not acceptable.

3.3 **BOXES AND SUPPORTS**: Boxes shall be provided in the wiring or raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways, 4 by 4 inch nominal size and smaller, shall be of the cast-metal hub type when located in normally wet locations, when flush and surface mounted on outside of exterior surfaces. Large size boxes shall be as shown. Boxes in other locations shall be sheet steel. In partitions of light steel construction bar hangers with 1 inch long studs, mounted between metal wall studs or metal stud "C" brackets snapped on and tab-locked to metal wall studs, shall be used to secure boxes to the building structure. When "C" brackets are used, additional box support shall be provided on the side of the box opposite the brackets. The edges of boxes for electrical devices

shall be flush with the finished surfaces in gypsum and plasterboard installations. Boxes installed for concealed wiring shall be provided with suitable extension rings or plaster covers as required. Outlet boxes on opposite sides of fire rated walls shall be separated by a minimum horizontal distance of 24 inches. Boxes and supports shall be fastened to wood with wood screws or screw-type nails of equal holding strength, with bolts and metal expansion shields on concrete or brick, with toggle bolts on hollow masonry units, and with machine screws or welded studs on steel work. Threaded studs driven in by powder charge and provided with lock washers and nuts, or nail-type nylon anchors may be used in lieu of expansion shields, or machine screws. In open overhead spaces, cast-metal boxes threaded to raceways need not be separately supported except where used for fixture support; cast-metal boxes having thread-less connectors and sheet to or supported from joist bridging. Cast-metal boxes with 3/32 inch wall thickness are acceptable. Where bar metal boxes shall be supported directly from the building structure or by bar hangers. Hangers shall not be fastened and the raceway shall be supported with an approved type fastener not more than 24 inches from the box. hangers are used, the bar shall be attached to raceways on opposite sides of the box Penetration of more than 1-1/2 inches into reinforced-concrete beams or more than 3/4 inch into reinforced-concrete joists shall avoid cutting any main reinforcing steel.

3.3.1 **Boxes for Use with Raceway Systems**: Boxes for use with raceway systems shall be not less than 1-1/2 inches deep except where shallower boxes required by structural conditions are approved. Sheet metal boxes for other than lighting fixtures shall be not less than 4 by 2 inch boxes may be used where only one raceway enters the outlet. Contractor shall size the telephone outlet boxes as required by the number, size and type of outlets specified and as required by the outlets furnished by the Contractor.

3.3.2 Reserved.

3.3.3 **Pull Boxes**: Pull boxes of not less than the minimum size required by NFPA 70 shall be constructed of galvanized sheet steel, except where cast-metal boxes are required in locations specified above. Boxes shall be furnished with screw-fastened covers. Where several feeders pass through a common pull box, the feeders shall be tagged to indicate clearly the electrical characteristics, circuit number, and panel designation.

3.3.4 **Clock Outlet**: Clock outlet, for use in other than a wired clock system, shall consist of an outlet box, a plaster cover where required, and a single receptacle with clock-outlet plate. The receptacle shall be recessed sufficiently within the box to allow the complete insertion of a standard cap, flush with the plate. A suitable clip or support for hanging the clock shall be secured to the top of the plate. Material and finish of the plate shall be as specified in paragraph DEVICE PLATES.

3.3.5 Reserved.

3.4 **DEVICE PLATES**: One-piece type device plates shall be provided for all outlets and fittings. Plates on unfinished walls and on fittings shall be of zinc-coated sheet steel, cast-metal, or impact resistant plastic having rounded or beveled edges. Plates on finished walls shall be of steel with baked enamel finish or impact-resistant plastic and shall be brown satin finish corrosion resistant steel or satin finish chromium plated brass. Screws shall be of metal with countersunk heads, in a color to match the finish of the plate. Plates shall be installed with all four edges in continuous contact with finished wall surfaces without the use of mats or similar devices. Plaster fillings will not be permitted. Plates shall be installed with an alignment tolerance of 1/16 inch. The use of sectional-type device plates will not be permitted. Plates installed in wet locations shall be gasketed and provided with a hinged, gasketed cover, unless otherwise specified.

3.5 **RECEPTACLES**

3.5.1 **Single and Duplex**: Single and duplex receptacles shall be rated 20 amperes, 125 volts, two-pole, three- wire, grounding type with polarized parallel slots. Bodies shall be of brown or ivory to match color of switch handles in the same room or to harmonize with the color of the respective wall, and supported by mounting strap having plaster ears. Contact arrangement shall be such that contact is made on two sides of an inserted blade. Receptacle shall be side- or back-wired with two screws per terminal. The third grounding pole shall be connected to the metal mounting yoke. Switched receptacles shall be the same as other receptacles specified except that the

ungrounded pole of each suitable receptacle shall be provided with a separate terminal. Only the top receptacle of a duplex receptacle shall be wired for switching application. Receptacles with ground fault circuit interrupters shall have the current rating as indicated, and shall be UL Class A type unless otherwise shown. Ground fault circuit protection shall be provided as required by NFPA 70 and as indicated on the drawings.

3.5.2 Thru 3.5.5 Reserved.

3.6 **WALL SWITCHES**: Wall switches shall be of the totally enclosed tumbler type. The wall switch handle and switch plate color shall harmonize with the color of the respective wall. Wiring terminals shall be of the screw type or of the solderless pressure type having suitable conductor-release arrangement. Not more than one switch shall be installed in a single-gang position. Switches shall be rated 20-ampere120-volt for use on alternating current only. Pilot lights indicated shall consist of yoke-mounted candelabra-base sockets rated at 75 watts, 125 volts, and fitted with glass or plastic jewels. A clear 6-watt lamp shall be furnished and installed in each pilot switch.

3.7 **SERVICE EQUIPMENT**: Service-disconnecting means shall be of the type as indicated with external handle for manual operation. When service disconnecting means is a part of an assembly, the assembly shall be listed as suitable for service entrance equipment. Enclosures shall be sheet metal with hinged cover for surface mounting unless otherwise indicated.

3.8 & 3.9 Reserved.

3.10 **FUSES**: Equipment provided under this contract shall be provided with a complete set of properly rated fuses when the equipment manufacturer utilize fuses in the manufacture of the equipment, or if current-limiting fuses are required to be installed to limit the ampere-interrupting capacity of circuit breakers or equipment to less than the maximum available fault current at the location of the equipment to be installed. Fuses shall have a voltage rating of not less than the phase-to-phase circuit voltage, and shall have the time-current characteristics required for effective power system coordination.

3.11 Reserved.

3.12 **AERIAL SERVICES**: Services shall conform to the requirements of Section 16370 ELECTRICAL DISTRIBUTION SYSTEM, AERIAL and NFPA 70. The service drop conductors shall be continuous from the point of connection on the last pole to the service entrance equipment and shall be routed from the service mast to a weather head before entry into an enclosing conduit. A drip loop shall be formed in each service conductor below the entrance to the weather head. The weather head shall be securely fastened to a rigid galvanized steel (RGS) conduit that shall be terminated in the service entrance equipment which penetrates the exterior wall. Penetration of an exterior wall shall be sealed to prevent the entrance of moisture and the escape of conditioned air. Service entrance conductors shall be routed in RGS conduit in the exterior wall, and in the interior of the building that contains the service entrance equipment. Aerial service drop conductors will be extended to building service entrance and terminated.

3.13 thru 3.16 Reserved.

3.17 **LAMP AND LIGHTING FIXTURES**: Ballasted fixtures shall have ballasts which are compatible with the specific type and rating of lamps indicated and shall comply with the applicable provisions of the publications referenced.

3.17.1 **Lamps**: Lamps of the type, wattage, and voltage rating indicated shall be delivered to the project in the original cartons and installed in the fixtures just prior to the completion of the project.

3.17.1.1 **Incandescent**: Incandescent lamps shall be for 125-volt operation unless otherwise indicated.

3.17.1.2 **Fluorescent**: Fluorescent lamps for magnetic ballasts shall have standard cool-white color characteristics and shall be of a type that will not require starter switches. Lamps shall be of the rapid-start type unless otherwise shown or approved. Fluorescent lamps for electronic ballasts shall be as indicated.

3.17.1.3 **High-Intensity-Discharge**: High-intensity-discharge lamps shall be the high-pressure sodium type unless otherwise indicated, shown, or approved.

3.17.2 **Fixtures**: Fixtures shall be as shown and shall conform to the following specifications and shall be as detailed on Standard Drawing No. 40-06-04, Sheet Nos. 31, which accompany and form a part of this specification for the types indicated. Illustrations shown on these sheets are indicative of the general type desired and are not intended to restrict selection to fixtures of any particular manufacturer. Fixtures of similar designs and equivalent energy efficiency, light distribution and brightness characteristics, and of equal finish and quality will be acceptable if approved. In suspended acoustical ceilings with fluorescent fixtures, the fluorescent emergency light fixtures shall be furnished with self-contained battery packs.

3.17.2.1 **Accessories:** Accessories such as straps, mounting plates, nipples, or brackets shall be provided for proper installation. Open type fluorescent fixtures with exposed lamps shall have a wire-basket type guard.

3.17.2.2 Reserved

3.17.2.3 **Ceiling Fixtures**: Ceiling fixtures shall be coordinated with and suitable for installation in, on, or from the suspended ceiling provided under other sections of these specifications. Installation and support of fixtures shall be in accordance with the NFPA 70 and manufacturer's recommendations. Where seismic requirements are specified herein, fixtures shall be supported as shown or specified. Surface-mounted fixtures shall be suitable for fastening to the structural support for ceiling panels.

3.17.2.4 **Sockets**: Sockets of industrial, strip, and other open type fluorescent fixtures shall be of the type requiring a forced movement along the longitudinal axis of the lamp for insertion and removal of the lamp.

3.17.3 thru 3.19 Reserved.

3.20 **EQUIPMENT CONNECTIONS:** All wiring not furnished and installed under other sections of the Specifications for the connection of electrical equipment as indicated on the drawings shall be furnished and installed under this section of the specifications. Connections shall comply with the applicable requirements of paragraph WIRING METHODS..

3.20.1 thru 3.21 Reserved.

3.22 **TELEPHONE WIRING SYSTEM**: The telephone wiring system shall be complete and functional.

3.22.1 **Telephone Cables**: Each telephone outlet will be serviced with 24-gauge solid copper station-type color coded cable, vinyl insulated with an overall vinyl jacket. Cable shall be continuous from each telephone outlet to backboard indicated on the drawings. Splicing of individual cables shall not be permitted. At each outlet, four-pair cable shall be terminated on the modular jack assembly, using color code provided by the Contracting Officer. At the backboard, terminate the cable on cross-connect terminal blocks and mark with the appropriate outlet number.

3.22.2 **Telephone Outlets**: Modular telephone outlets shall comply with FCC Rules and Regulations, Part 68, Subpart F. Each modular outlet shall have a single modular jacks. Each eight-position jack in the modular outlet shall contain screw terminals or approved quick connect terminals for each conductor in the cable. The flush mounted cover shall be ivory.

3.22.3 **Crossconnect Blocks**: Punch down 66 type connecting blocks shall be provided to terminate all subscriber lines. The blocks shall be attached to right side of the plywood telephone backboard in vertical rows.

3.22.4 **Telephone Backboards**: Telephone backboards shall be installed at locations shown on the drawings. The backboards shall be 3/4 inch plywood having a two-coat insulating varnish finish and shall be sized as shown on the drawings.

3.22.5 **Building Entry Protection Modules**: Building Entry Protection Modules shall be provided to terminate the building feeder cable. The modules shall be attached to the left side of the telephone backboard.

3.22.6 Reserved.

3.22.7 **Qualifications of Installer**: The system shall be installed by an experienced installer regularly engaged in the installation of telephone systems. The Contracting Officer may reject any proposed installer who can not show evidence of such qualifications.

3.23 **PAINTING AND FINISHING**: Field-applied paint on exposed surfaces shall be provided.

3.24 **REPAIR OF EXISTING WORK**: The work shall be carefully laid out in advance, and where cutting, channeling, chasing, or drilling of floors, walls, partitions, ceiling, or other surfaces is necessary for the proper installation, support, or anchorage of the conduit, raceways, or other electrical work, this work shall be carefully done, and any damage to building, piping, or equipment shall be repaired by skilled mechanics of the trades involved, at no additional cost to the Government.

3.25 **TESTS**: After the interior-wiring-system installation is completed, and at such time as the Contract Officer may direct the Contractor shall conduct an operating test for approval. The equipment shall be demonstrated to operate in accordance with the requirements of this specification. Continuity test shall be conducted on the telephone wiring system. The test shall be performed in the presence of the Contracting Officer. The Contractor shall furnish all instruments and personnel required for the tests, and the Government will furnish the necessary electric power. No part of the electrical distribution system shall be energized prior to the resistance testing of that system's ground rods and submission of test results to the Contracting Officer. Test reports shall indicate the location of the rod and the resistance and the soil conditions at the time the test was performed.

End of Section